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January 31, 2001

Mr. Michael J. Mikulka, P.E.
Senior Environmental Engineer
U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604

Dear Mr. Mikulka:

Enclosed are the documents you requested during the inspection on January 29, 2001.

If you have any questions or require further information, please contact me at (773) 646-6202, x233.

Sincerely,

James R. Laubsted
Facility Compliance Manager

RCRA Air Emission Standards
for
Clean Harbors Services, Inc.

Clean Harbors Services, Inc.
11800 South Stony Island Avenue
Chicago, IL 60617

Prepared for:

United States Environmental Protection Agency
Region V

December 6, 1996

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Clean Harbors Services, Inc.
RCRA Air Emissions Standards

1.0 REGULATORY BACKGROUND

1.1 Rulemakings

On June 21, 1990, the United States Environmental Protection Agency (US EPA) promulgated final standards under Section 3004 of the Hazardous and Solid Waste Amendments (HSWA) to limit organic air emissions for certain hazardous waste activities conducted at treatment, storage and disposal facilities (TSDF's) requiring a permit under subtitle C of the Resource Conservation and Recovery Act (RCRA). The phase I rules established final standards limiting organic emissions from (1) process vents associated with distillation, fractionation, thin film evaporation, solvent extraction, and air or steam stripping operations that manage hazardous wastes with 10 parts per million by weight or greater average organics concentration, and (2) leaks from equipment that contains or contacts hazardous waste streams with 10 percent by weight or greater total organics. Theses standards are promulgated in 40 CFR 264/265, Subparts AA and BB.

On December 6, 1994, the US EPA promulgated phase II standards under 40 CFR 264/265, Subpart CC to limit emissions from tanks, containers, surface impoundments, and miscellaneous units. This regulation also removed a "permit shield" which had been in effect for previously permitted RCRA facilities, exempting them from compliance with the phase I requirements until the renewal of their operating permits. Final technical amendments for the Subpart CC rulemaking were published On November 25, 1996. The Subpart CC regulations require that permitted and interim status facilities and all 90-day generators comply with the requirements of Subparts AA, BB and CC by December 6, 1996.

1.2 Permit as a Shield

Prior to the promulgation of the Subpart CC standards, TSDF's operating with an approved Part B permit that did not include conditions to comply with Subparts AA and BB were not required to comply with these requirements. The adoption of Subpart CC has removed this "permit shield", and now all TSDF's must comply with the requirements of Subparts AA, BB and CC effective December 6, 1996.

Existing permitted and interim status facilities must comply with the provisions of 40 CFR 265 Subparts AA, BB and CC until such time as their permit or renewal is issued which contains the conditions to comply with the provisions of 40 CFR 264 Subparts AA, BB and CC. The only substantive difference between these two sets of regulations are the reporting requirements for permitted facilities under 40 CFR 264 Subparts AA, BB and CC.

The Clean Harbors Services, Inc. (CHSI) facility currently operates under a RCRA Part B permit which was issued by the Illinois Environmental Protection Agency (IEPA) on November 4, 1993 which will expire on November 4, 2003. The facility also operates under a Federal RCRA/HSWA permit issued by the U.S. Environmental Protection Agency (USEPA) on November 4, 1993. The Federal permit includes specific provisions for complying with 40 CFR 264 Subparts AA and BB. The existing Federal permit does not include specific RCRA air provisions for Subpart CC, the facility must comply with 40 CFR 265 Subpart CC until such time that the Federal permit is revised to include the RCRA air requirements in 40 CFR 264 Subpart CC.

For the sake of clarity and completeness, this document has been written using 40 CFR 264 references, with the exception of the "Waste Determination Procedures" which appear in detail at 40 CFR 265.1084. As noted above, the requirements of Parts 264 and 265 are identical except that no reporting requirements are included under Part 265. Therefore, Sections 6.4 of this document shall not become effective until the Federal HSWA permit is revised to include compliance with 40 CFR 264 Subpart CC reporting requirements.

1.3 Purpose of this Document

This document summarizes the requirements of the Subpart AA, BB and CC regulations as they apply to the Chicago facility. It also presents information on the facility, and describes the procedures which shall be implemented to ensure compliance with the requirements of RCRA Subparts AA, BB and CC. It is intended to fulfill the regulatory requirement to have in place a written compliance plan, and also serve as a working guide for the facility compliance managers. The document shall be modified as changes in facility operations and regulations affecting those operations are changed. The regulatory nomenclature and minimum compliance requirements are summarized in **Table 1.1**.

Table 1.1
RCRA Air Emissions Regulations
Overview

	Subpart AA Process Emissions Control	Subpart BB Leak Detection and Repair	Subpart CC Storage Emissions Controls
Existing Permitted, Interim Status, and 90 Day Generator Facilities	40 CFR 265.1030-1035 No Reporting Requirements Compliance Plan Required by 12/5/95	40 CFR 265.1050-1064 No Reporting Requirements Compliance Plan Required by 12/5/95	40 CFR 265.1080-1091 No Reporting Requirements Compliance Plan Required by 12/5/96
New, Repermitted or 90 Day Generator Facilities	40 CFR 264.1030-1036 Reporting Required Compliance Plan Completed Prior to Start Up	40 CFR 264.1050-1065 Reporting Required Compliance Plan Completed Prior to Start Up	40 CFR 264.1080-1091 Reporting Required Compliance Plan Completed Prior to Start Up
Applies to	1. Distillation 2. Fractionation 3. Thin Film Evaporation 4. Solvent Extraction 5. Air Stripping 6. Steam Stripping	1. Pumps 2. Compressors 3. Pressure Relief Devices 4. Open Ended Valves 5. Open Ended Lines 6. Valves 7. Flanges 8. Other Connectors	1. Tanks 2. Surface Impoundments 3. Containers 4. Closed Vent Systems 5. Emissions Control Devices 6. Miscellaneous Units (Subpart X)
Applies if	Waste Content >/= 10 ppm by weight Volatile Organics on an Annual Average Basis	Waste Content >/= 10% by Weight Volatile Organics on an Instantaneous Basis	Waste Content >/= 500 ppm by weight Volatile Organics on an Average Basis
Requires	Limit Process Emissions to < 3.0 lbs/hr and 3.1 tons/yr by process restrictions or emissions controls	Leak Detection and Repair Program with Regular Inspection and Maintenance	Emissions Controls for Storage coupled with Inspection and Monitoring

Revision Date: December 6, 1996

2.0 FACILITY BACKGROUND

2.1 Overview of Waste Management Activities

The Clean Harbors Services, Inc. (CHSI) facility located at 11800 South Stony Island Avenue, Chicago is a RCRA Part B permitted hazardous waste TSDF and has been permitted by the US EPA and the IEPA to receive, treat and transfer a variety of waste streams. The treatment methods utilized at this facility reduce the volume and or toxicity of waste materials to a level that meets specifications for discharge into a publicly owned treatment works for wastewater (POTW), or makes it suitable for further treatment, reuse or disposal.

The following sections present information on the hazardous waste treatment systems operating at the facility, and their relationship to Subparts AA, BB and CC.

2.1.1 Fuels Blending and Dispersion

This process manages hazardous and non-hazardous wastes in various physical states. Semi-solids and sludges are blended with liquids through a dispersion blending process.

Fuels dispersion is accomplished through the use of an automated system which removes the contents of standard 55 gallon drums and mixes them into a 1130 gallon (working capacity) fuels dispersion tank which is agitated by two internal mixers. The fuels dispersion system is enclosed and vented through an activated carbon bed consisting of drums in series which provide a minimum removal efficiency of 90%.

The resultant blend is shipped off-site as a hazardous waste fuel to properly licensed industrial burners and furnaces, or to a properly licensed hazardous waste incinerator. Solids are shipped off-site as waste fuel for destruction in licensed industrial burners, furnaces or incinerators.

2.1.2 Tank Farm

Hazardous waste fuel is stored in a tank farm consisting of ten (10) above ground storage tanks. The tanks have a total storage capacity of 134,800 gallons allocated as follows:

Tank 101	12,800 gallons
Tank 102	12,800 gallons
Tank 103	12,800 gallons
Tank 104	12,800 gallons
Tank 105	12,800 gallons
Tank 106	12,800 gallons
Tank 107	12,800 gallons
Tank 109	12,800 gallons
Tank 110	12,800 gallons
Tank 112	19,600 gallons

The tanks are fitted with emissions control systems which include a conservation vent, a permanently mounted submerged fill pipe, and granular activated carbon beds to remove organic emissions resulting from breathing and working losses.

2.1.3. Stabilization/Solidification

The physical absorption method of solidification utilizes clay based absorbents and/or synthetic polymers to absorb liquids. Cement type stabilization is the process of blending high calcium-oxide limes with liquids/solids to generate a gypsum like solid. The process enables the hazardous waste to be contained in the gypsum like matrix. These processes are performed in drums and other bulk containers.

2.1.4 Container Management

Methods of treatment in containers may include neutralization, solidification, product adulteration, carbon adsorption and blending of compatible wastes. RCRA regulated liquids are consolidated and shipped off site for incineration. Container treatment and storage occurs in several permitted areas throughout the facility.

2.1.5 Lab Packs

Lab pack repacking involves removing the chemicals from the original shipping container and blended, solidified, treated or repacked with compatible lab packs for off-site treatment or disposal.

2.1.6 Storage and Consolidation

A wide variety of organic and inorganic wastes are accepted for temporary storage. While temporarily stored, the waste is typically consolidated according to compatibility and shipped off-site to a properly licensed waste management facility.

2.1.7 Transportation

Transportation for all types of waste treated at CHSI or processed at other Clean Harbors' facilities can be coordinated throughout the company's fleet. Typical vehicles operated from or through the CHSI facility which would be affected by the requirements of Subpart CC include:

Tractor Trailers
Vacuum Trailers
Stainless Steel Vacuum Trucks
Stainless Steel Transport Trailers
Lined Transport Trailers
Roll Off and Dump Trailers

Dump Trucks
Frac Tanks
Roll Off Containers

2.1.8 Hazardous Waste Generator

The facility also generates hazardous waste through the operation of its laboratory, maintenance activities, treatment activities and other processes. These wastes are stored in tanks and containers which are located at the facility. The facility is considered a Large Quantity Generator subject to a 90-day accumulation standard.

2.1.9 Wastewater Treatment

Aqueous wastes that contain metals and/or low organics concentrations are treated via precipitation filter, chemical oxidation/reduction, and activated carbon adsorption. Treated wastes are discharged to the City of Chicago POTW operated by the Metropolitan Water Reclamation District of Greater Chicago. The activated carbon is regenerated off site except for carbon used to treat PCB contaminated water. The PCB carbon is managed according to TSCA disposal requirements.

Metals are precipitated using predetermined treatment chemicals. Sludges and solids are removed via a gravity clarifier and disposed of according to applicable regulations. Disposal options include landfill or incineration off site.

Acids and bases are also neutralized in this system using caustics or acids to adjust the pH to discharge requirements.

Organics that are physically separated from waters are analyzed and fuels blended or incinerated.

2.1.10 PCB Management

TSCA regulated wastes such as polychlorinated biphenyls (PCB) are managed in two bulk liquid storage tanks (102 and 110) and in two container storage areas at the facility. Wastes are transported to TSCA approved incinerators or landfills and managed per regulations and customer requirements. The facility also drains and flushes PCB transformers to comply with TSCA regulations. Other PCB wastes managed include: capacitors, ballasts, and RCRA/TSCA wastes.

2.1.11 Storage and Transfer of Waste Oils

Waste industrial lubricating and fuel oils are stored on-site. Once a sufficient quantity is accumulated, the waste oil is shipped off-site for reclamation. All waste oil management activities are performed in accordance with the standards of 40 CFR 279.

3.0 APPLICABILITY OF RCRA AIR RULES

The requirements and applicability of the RCRA Air rules to each of the treatment processes at the CHSI facility is discussed below.

3.1 Subpart AA - Air Emission Standards for Process Vents

3.1.1 Regulated Waste Streams

Subpart AA applies only to vents from process operations which manage hazardous wastes with organic concentrations of at least 10 ppm by weight on an annual average basis. The concentration can be determined by process knowledge, or by analytical methods using EPA Method 18 contained in 40 CFR Part 60. A detailed description of Subpart AA requirements is provided in Section 4.0.

3.1.2 Regulated Processes

Subpart AA applies only to the following six (6) processes:

1. Distillation
2. Fractionation
3. Thin-film Evaporation
4. Solvent Extraction
5. Air Stripping
6. Steam Stripping

3.1.3 Applicability to the CHSI Facility

The Chicago facility does not perform any of the six treatment processes identified above. Therefore, the CHSI facility is not required to comply with the requirements of Subpart AA.

3.2 Subpart BB - Air Emissions Standards for Equipment Leaks

3.2.1 Regulated Waste Streams

Subpart BB applies to certain types of equipment used to manage hazardous wastes with organic concentrations of at least 10% by weight at any time.

The organic concentration of the hazardous waste can be determined by process knowledge, or by analytical methods using any of the following test methods which are included in the facility's waste analysis plan:

* ASTM D 2267-88
* ASTM E 169-87
* ASTM E 168-88
* ASTM E 260-85

* SW 846 Method 9060
* SW 846 Method 8240

A detailed description of Subpart BB is provided in Section 5.0.

3.2.2 Regulated Equipment

Subpart BB applies to the following equipment only when it is used to manage wastes with a volatile organic concentration in excess of 10%:

* Pumps
* Compressors
* Pressure Relief Devices
* Sampling Connecting Systems
* Open Ended Valves or Lines
* Valves
* Flanges
* Other Connectors

3.2.3 Applicability to the CHSI Facility

The CHSI facility's piping and fuels dispersion system are subject to the requirements of Subpart BB because they routinely handle wastes with an organic content in excess of 10% by weight. Emissions from the regulated equipment are managed by the implementation of a leak detection and repair (LDAR) program. Emissions control devices are not currently used to manage the emissions from Subpart BB regulated equipment.

A summary of affected equipment types and the control and compliance requirements for each of the affected equipment types is presented in **Table 3.1.** A detailed list of the equipment at CHSI which is subject to Subpart BB is presented in **Appendix A.**

3.3 Subpart CC - Air Emissions Standards for Tanks, Surface Impoundments, and Containers

3.3.1 Regulated Waste Streams

Subpart CC requires the implementation of design, emissions control, monitoring and inspection requirements for tanks, containers, surface impoundments and Subpart X miscellaneous units (if required by permit) which manage hazardous wastes with an average volatile organic concentration equal to or greater than 500 ppm by weight.

Table 3.1
RCRA Air Emissions Regulations
Subpart BB Compliance Requirements by Equipment Type
Summary for Clean Harbors Services, Inc.

Source	Service	Emissions Limit	Equipment Specification	Work Practice	Repair Requirements
Pump	Light Liquid	No Detectable Emissions 10,000 ppm by volume or 500 ppmv for "No Detectable Emissions Service"	Dual Seals, Closed Vent	Monthly Monitoring and Weekly Inspection or Weekly Inspection and monitor w/in 5 days if Evidence of leak	First Attempt w/in 5 Days Completed w/in 15 Days
	Heavy Liquid	No Detectable Emissions 10,000 ppmv	Dual Seals, Closed Vent	Monitor w/in 5 days if Evidence of Leak is Found	First Attempt w/in 5 days Completed w/in 15 days
Valve	Gas & Light Liquid	No Detectable Emissions 10,000 ppmv or 500 ppmv for "No Detectable Emissions Service"		Monthly Monitoring and Weekly Inspection or Test for Compliance Annually	First Attempt w/in 5 days Completed w/in 15 days
	Heavy Liquid	No Detectable Emissions 10,000 ppmv		Monitor w/in 5 days if Evidence of Leak is Found	First Attempt w/in 5 Days Completed w/in 15 Days
Pressure Relief Device	Gas	No Detectable Emissions 500 ppmv	Closed Vent	Monitor w/in 5 days if Pressure Release event	Return to No Detectable Emissions w/in 5 Days
	Light & Heavy Liquids	No Detectable Emissions 10,000 ppmv	Closed Vent	Monitor w/in 5 days if Evidence of Leak is Found	First Attempt w/in 5 Days Completed w/in 15 Days
Flange/ Connector	Gas, Light & Heavy Liquids	No Detectable Emissions 10,000 ppmv		Monitor w/in 5 Days if Evidence of Leak is Found	First Attempt w/in 5 Days Completed w/in 15 Days
Compressor	Gas	No Detectable Emissions 500 ppmv or Barrier Fluid Sensor	Seal System with Barrier Fluid or Closed Vent	Check Sensors Daily or Check Alarms Monthly	First Attempt w/in 5 Days Completed w/in 15 Days
Sampling Connection	Gas, Light & Heavy Liquids	Collect purged fluids during sampling event	Place in tank or container	None	Re-close after sampling
Open Ended Line	Gas, Light & Heavy Liquids	No Detectable Emissions (Refer to Specific Equipment Standards)	Cap, Plug, Flange or Second Valve	Monitor if Evidence of Leak is Found (Refer to Specific Equipment Standards)	Refer to Specific Equipment Standards

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Key:

No Detectable Emissions: As monitored with calibrated Flame Ionization Detector (FID). See Appendix E for methods.

No Detectable Emissions Service: Defined as Specific Equipment designed to operate with no detectable emissions.
For Pumps this requires (1) No Shaft Penetration of Housing, (2) No Detectable Emissions at 500 ppm level, and (3) Tested for Emissions Annually
Diaphragm Pumps are designated as No Detectable Emissions Service. Gear Pumps and Centrifugal Pumps are not.

Light Liquid: As defined in text, Section 5.1.1. Generally any organic liquid with a vapor pressure above that of kerosene.

Heavy Liquid: As defined in text, Section 5.1.1. Generally, all organic liquids which are not light liquids.

ppmv: parts per million by volume as measured with a calibrated instrument. See Appendix E for methods.

Inspection means: Visually inspect all mating surfaces, sealing surfaces, and openings for indications of leakage.
Visually inspect all connectors, fasteners and closure caps for proper installation.
Listen for sounds which might indicate leakage. Be aware of odors and smells which might indicate leakage.

Monitoring Means: Testing for the presence of volatile organic compounds using a calibrated instrument. The testing procedures and Calibration procedures are contained in Appendix E.

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The organic concentration for the waste is to be determined at the "point of waste origination" (see Section 6.0 for definition). For the CHSI facility, this is the point at which the waste is first accepted by the facility or at the point of generation for on-site generator activities. The organic concentration may be determined by knowledge of the waste, or by direct measurement using EPA Method 25D in 40 CFR 60, appendix A or the other analytical methods identified in 40 CFR 265.1084(a)(3)(iii) and listed below:

* Method 624, 40 CFR Part 136, Appendix A
* Method 625, 40 CFR Part 136, Appendix A
* Method 1624, 40 CFR Part 136, Appendix A
* Method 1625, 40 CFR Part 136, Appendix A
* Method 8260(B), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, September 1986, as amended by Update I, November 15, 1992
* Method 8270(C), "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, Third Edition, September 1986, as amended by Update I, November 15, 1992
* Any other EPA standard method validated in accordance with "Alternative Validation Procedure for EPA Waste and Wastewater Methods, 40 CFR Part 63, Appendix D
* Any other method validated per 40 CFR Part 265.1084(a)(3)(iii)(I).

A minimum of four samples are required for a direct measurement determination.

A detailed description of Subpart CC requirements is provided in Section 6.0.

3.3.2 Regulated Equipment

Subpart CC requirements apply to the following types of equipment when they are used to manage wastes with an average volatile organic content in excess of 500 ppm by weight:

* Tanks
* Surface Impoundments
* Containers
* Closed Vent Systems
* Emissions Control Devices
* Miscellaneous Units (Subpart X)

3.3.3 Applicability to the CHSI Facility

The CHSI facility is subject to Subpart CC since it uses tanks and containers to manage hazardous waste which have an average volatile organic concentration that is equal to or greater than 500 ppm by weight.

The tanks subject to Subpart CC include storage tanks 101-107, 109, 110, and 112, and the fuels blending system. These tanks are equipped with closed vent systems and emissions control devices which are also subject to the requirements of Subpart CC because they control emissions from the tanks regulated under Subpart CC. All other on-site tanks manage hazardous waste containing less than 500 ppmw volatile organics or non-hazardous waste.

CHSI receives hazardous waste containing greater than 500 ppmw volatile organics in several types of containers including: drums, labpack containers, rolloffs, railcars, tankers, intermodals, etc. These containers are subject to the Subpart CC requirements.

The CHSI facility does not have any Surface Impoundments or any Miscellaneous Units, thus the Subpart CC requirements for these units do not apply.

Table 3.2 lists the compliance requirements for each type of affected equipment. The specific equipment affected at the CHSI facility is listed in **Appendix** B.

4.0 SUBPART AA - COMPLIANCE PROGRAM - AIR EMISSION STANDARDS FOR PROCESS VENTS

Subpart AA applies to process vents associated with distillation, fractionation, thin film evaporation, solvent extraction, air stripping and steam stripping operations which manage hazardous wastes with an average annual volatile organic content of 10.0 ppm by weight or greater.

The CHSI facility does not operate any process regulated under Subpart AA; therefore, CHSI is not subject to Subpart AA requirements.

Table 3.2
RCRA Air Emissions Regulations
Subpart CC - Compliance Requirements for Affected Facilities

Organic Threshold:

Greater than or equal to 500 ppm by weight volatile organic (VO) concentration as determined by generator knowledge or by US EPA reference method 25D or other method identified in 40 CFR 265.1084(a)(3)(iii). The VO concentration is determined at the point of waste origination (POWO) for each individual waste stream. For a generator, POWO is the point at which a solid waste is defined as a hazardous waste. For a TSD, POWO is the point at which the hazardous waste enters the facility.

Surface Impoundments:

Subpart CC requires that surface impoundments used to manage hazardous wastes be operated with covers which vent to an emissions control device. All material transfers into and out of the Surface Impoundment are to be made through "Closed Systems". All liquid transfers by pump are to be completed using "Submerged fill" techniques.

Tank Standards:

EPA has established two levels of air controls for tanks. Under Level 1, fixed-roof tanks may operate without emission control devices (e.g., carbon absorption units) and without periodic air monitoring for leak detection, provided that certain restrictions regarding tank design/operation and maximum organic vapor pressure limits are met. Any tank that does not qualify for Level 1 controls must comply with the Level 2 control standards. Level 2 requires more sophisticated emission control techniques (e.g., floating roofs, control devices) and mandatory periodic air monitoring for leak detection.

LEVEL 1 TANK CONTROL REQUIREMENTS

- A fixed roof tank that meets maximum organic vapor pressure (MOVP) limits and other specific operating parameters may be operated under Level 1 controls. For example, a fixed roof tank with a design capacity of less than 75 cubic meters (19,815 gallons) is eligible for Level 1 controls provided that: the MOVP of waste placed into the tank is less than 76.7 kilopascals (11.12 psia); the waste is not heated; and the tank is not being used for stabilization.
- The tank must be equipped with closure devices that are designed to form a continuous barrier over the entire surface area of waste in the tank, or be connected to a closed vent system connected to a control device (e.g. carbon absorption system).
- Initial and annual visual inspections must be conducted to ensure that there are no visible cracks, holes, gaps, or other open spaces between the roof section joints or between the interface of the roof edge and tank wall.
- Level 1 tanks do not require a closed vent system and air emissions control device.

LEVEL 2 TANK CONTROL REQUIREMENTS

- The tank meets one of the five (5) allowed designs: a tank that is vented through a closed vent system to a control device; a fixed roof tank with an internal floating roof; a tank with an external floating roof; a pressure tank; or a tank located inside an enclosure that is vented through a closed vent system to an enclosed combustion control device.
- For a typical fixed roof tank subject to Level 2 controls, the tank would require organic vapors to be routed through a closed vent systems to a control device (e.g., carbon adsorption) that provides a minimum organic removal efficiency of 95%.

Container Standards:

All containers of less than 26 gallons design capacity are exempt from Subpart CC. There are three levels of emission controls for containers depending on the design capacity of the container, whether or not the container is being used "in light material service", and whether or not the container is used for a stabilization treatment process. The term "in light material service" means that the container is used to manage a material for which both of the following apply: (1) The vapor pressure of one or more of the organic constituents in the material is greater then 0.3 kilopascals (0.044 psia) at 20 degrees C; and (2) The total concentration of the pure organic constituents having a vapor pressure greater than 0.3 kilopascals (0.044 psia) at 20 degrees C is equal to or greater than 20 percent by weight.

LEVEL 1 CONTROLS

Containers with a design capacity of 26 to 119 gallons; and containers with a design capacity exceeding 119 gallons and containing a hazardous waste that is not "in light material service". For a non-DOT container with a capacity greater than 119 gallons, the facility must maintain a copy of the procedure used to determine that the container is not "in light material service". Under Level 1, the container must be one of the following:

1. A U.S. DOT container;
2. A container that is equipped with a cover and closure devices that form a continuous barrier over the container openings such that when secured, there are no visible holes, gaps, or other open spaces into the interior of the container. The cover may be a separate cover (e.g., lid on a drum, tarp on a rolloff) or may be an integral part of the container structural design (e.g., a portable tank); or
3. The container must be an open-top container in which an organic-vapor suppressing barrier is placed on or over the hazardous waste such that no hazardous waste is exposed to the atmosphere (e.g., a vapor suppressing foam).
   - All covers and closure devices must be composed of materials that are suitable to minimize waste exposure to the atmosphere and maintain equipment integrity for as long as it is in service.
   - All covers and closure devices must be secured and closed at all times, except when adding or removing waste or other materials, or performing routine activities other than transfer operations.
   - Visual inspection of covers and closure devices for visible cracks, holes, gaps, or other open spaces into the interior of the container is required within 24 hours after acceptance at a RCRA treatment, storage, and disposal facility.

LEVEL 2 CONTROLS

Containers with a design capacity exceeding 119 gallons and containing a waste that is "in light material service". Under Level 2, the container must be one of the following:

1. A U.S. DOT container;
2. A container that operates with "no detectable organic emissions" as determined through the monitoring of all closures using a photoionization detector or similar instrument; or
3. A container that has been demonstrated within the preceding 12 months to be vapor-tight using Method 27 in 40 CFR 60 Appendix A.
   - Containers managed under Level 2 controls must meet the same operating and inspection requirements as Level 1 containers.
   - Transfers in/out of a Level 2 container must be conducted in a manner that minimizes exposure of hazardous waste to the atmosphere. Examples of acceptable loading procedures include submerged fill, vapor balancing, or vapor recovery.

LEVEL 3 CONTROLS

Containers with a design capacity greater than 26 gallons which are used in a stabilization treatment process. Under Level 3, the container must be one of the following:

1. A container that is vented directly through a closed-vent system to a control device operating in accordance with 40 CFR 264.1086(e)(2)(ii); or
2. A container that is vented into an enclosure which is exhausted through a closed-vent system to a control device in accordance with 40 CFR 264.1086(e)(2)(i) and (e)(2)(ii).

Closed Vent Systems:	Level 2 Tank controls and Level 3 container controls require a closed vent systems be used to control the emissions of organic vapors. The closed vent systems shall be designed and operated with no detectable organic emissions (500 ppmv relative to background), and shall not be bypassed. If a bypass is installed, it shall be either locked and sealed, or continuously monitored.
Control Devices/ Carbon Absorption:	Level 2 Tank controls and Level 3 container controls require that organic vapor control devices provide a minimum removal efficiency of 95% by weight. Continuous monitoring is required except for carbon systems which require periodic monitoring. The 95% removal efficiency requirement for carbon bed system also includes emissions during the regeneration or destruction of the used carbon bed. Subpart CC further requires spent carbon be managed in an appropriately permitted facility.
Solidification/ Stabilization:	Waste stabilization and solidification activities involving hazardous wastes with a VO concentration of 500 ppmw or greater require Level 3 container controls.
Other Subpart CC Regulated Activities:	The requirements of Subpart CC can be extended to Subpart X Miscellaneous equipment at the discretion of the US EPA Regional Administrator. The specific requirements would be determined by the permitting engineer or the Regional Administrator.
Inspection Means:	Visually inspect all mating surfaces, sealing surfaces and openings for indications of leakage. Visually inspect all connectors, fasteners and closure caps for proper installation.
Monitoring Means:	Testing for the presence of organic compounds using a calibrated instrument. The testing procedures and calibration procedures are contained in Appendix E.

5.0 SUBPART BB - COMPLIANCE PROGRAM - AIR EMISSIONS STANDARDS FOR EQUIPMENT LEAKS

5.1 Overview and Summary of Requirements

Subpart BB applies to certain equipment that contains or contacts hazardous waste with organic concentrations of at least 10 percent by weight. At the CHSI facility, this would include the pumps, valves, flanges, piping and pressure relief devices found in the Tank Farm and the fuels blending system. The emissions control devices installed at the facility are not used to control the emissions from any Subpart BB regulated equipment, thus the requirements for emissions control systems under Subpart BB do not apply to these emissions control systems.

For the purposes of this Subpart BB compliance plan the waste managed in these units at CHSI is assumed to be at least 10% by weight organic material, and is also assumed to be in light liquid service or gas vapor service. This results in the most stringent leak detection requirements for the facility, thus ensuring compliance regardless of the composition of liquid in the affected processes.

Table 5.1 lists the affected equipment types and summarizes the inspection, monitoring, record keeping and reporting requirements for each type of equipment. **Appendix A** contains the current list of all Subpart BB affected equipment at the CHSI facility.

5.1.1 Definitions of Waste Stream Service

In "light liquid" service means that the the equipment contains or contacts a liquid mixture meeting the following three criteria:

1. Any one of the constituents has a vapor pressure in excess of 0.3 kPa (2.25 mm Hg or 0.003 atm) at 20 degrees C.

2. The constituents with a vapor pressure in excess of 0.3 kPa comprise at least 20% of the mixture.

3. The mixture is a liquid at the operating conditions.

In "gas/vapor" service means that the equipment contains or contacts a hazardous waste stream that is in gas or vapor phase at operating conditions.

In "heavy liquid" service means that the equipment is not in "gas/vapor" or "light liquid" service.

Table 5.1
RCRA Air Emissions Regulations
Subpart BB Compliance Requirements for Affected Equipment (see note a)
Clean Harbors Services, Inc.

Item (see note b)	Substantive Requirement (see note c)	Recordkeeping/Reporting Requirement
A. Pumps in Light Liquid Service	1. Monthly LDAR (see note d) - 264.1052 2. Weekly Visual Inspection - 264.1052(a)(2) (see note e)	3. Tag Leaking Sources only - 264.1064(c) 4. Record Dates, Repair Attempts, and Reasons for Delay of Repair - 264.1064(d)
Pumps in No Detectable Emissions Service	1. Designed and operated under certain conditions - 264.1052(e)(1),(2) 2. Tested for "no detectable emissions" on an annual basis - 264.1052(e)(3)	3. Record results of compliance tests 264.1064(g)
B. Compressors (General)	1. Installation of Seal System - 264.1053(a)-(d) 2. Monthly Inspection of Seals - 264.1053(e)	3. Record Seal System Design Criterion 264.1064(j) 4. Same as A3 and A4
C. Pressure Relief Devices in Gas Service (General)	1. Designed and Operated (see note f) for no detectable emissions - 264.1054(b) 2. Tested for No Detectable Emissions after each Over Pressure Release event - 264.1054(b)	3. Record Results of Compliance Test 264.1064(g)
D. Sampling Connection Systems (General)	1. Designed and Operated Under Certain Conditions 265.1055(a),(b)	2. Record Design Criterion - 264.1064(e)
E. Open Ended Valves or Lines	1. Cap Open Ended Lines - 264.1056(a)(1) 2. Operational Requirements - 264.1056(a)(2), (b), (c)	
F. Valves in Gas/Vapor or Light Liquid Service	1. Monthly LDAR - 264.1057(a)-(e)	2. Same as A3, A4
G. Valves on Gas/Vapor or Light Liquid Service (Unsafe to Monitor)	1. Monitoring during Safe to Monitor Times 264.1057(g)(2)	2. Maintain Record of Monitoring Plan and Explain Why Valve is Unsafe to Monitor - 264.1064(h)(1)
H. Valves in Gas/Vapor or Light Liquid Service (Difficult to Monitor)	1. Annual Monitoring - 264.1057(h)(3)	2. Maintain Record of Monitoring Schedule and Explain why Valve is Difficult to Monitor - 264.1064(h)(2)
I. Pressure Relief Devices in Liquid Service and Flanges and Other Connectors	1. LDAR within 5 days if evidence of leakage is discovered - 264.1058(a)	2. Same as A3, A4
J. Closed Vent Systems and Control Devices (General)	1. Designed and Operated under Certain Conditions - 264.1033, 264.1060 2. Tested Annually for No Detectable Emissions - 264.1033(j)(2) 3. Operate Closed Vent Systems and Control Devices when Emissions are Vented to Them - 264.1033(k)	4. Same as D2 5. Same as C3 6. Report Exceedances Semiannually - 264.1036(a)(2), 264.1065(a)(4)
K. Closed Vent Systems and Devices (Carbon Canisters not Regenerated on Site)	1. Designed and Operated Under Certain Conditions - 264.1033(b) 2. Monitor Control Devices and Replace Carbon Upon Breakthrough - 264.1033(h) 3. Same as J3	4. Same as D2 5. Record Monitoring and Maintenance Activities - 264.1035(c)(7), 264.1064 6. Report Exceedances and Missed Maintenanc Semiannually - 264.1065(a)(4)

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a. The requirements presented in this table are those for the equipment covered by Subpart BB. The base table is drawn from th document "Hazardous Waste TSDF, Technical Guidance Document for RCRA Air Emissions Standards for Process Vents and Equipmen ", EPA 450/3-89-021, July 1990.

b. Each source covered by Subpart BB is listed and the requirements for that source are annotated mainly by indicating the substantive requirements for that source, the citation for those requirements, the associated recordkeeping/reporting requireme and their citation.

c. The substantive requirements are summarized and a reference to the exact regulatory language is provided if more detail is needed.

d. LDAR means 'leak detection and repair'. This generally includes the use of a portable monitor to detect leaks and then, for those pieces of equipment that are leaking, repair of the leak. Delay of Repair is general to all sources and is presented separately in Table 5.2. Two Relevant thresholds are in place. For Pressure Relief Devices, and for Compressors in "no Detect Emissions' service, the Leak Determination Threshold is 500 ppmv. For all other equipment covered under Subpart BB, the releva threshold is 10,000 ppmv.

e. Inspection generally means visual inspection of seal areas as well as seal-barrier fluid system integrity. Inspection inclu repair of leaking seals and seal/barrier fluid systems.

f. Designed and operated generally means that specific equipment or designs are allowed if they are used in ways that results i emission reductions that are at least equivalent to the general requirements.

5.2 Equipment Monitoring

The monitoring requirements for the various types of affected equipment are presented in the following sections. Monitoring shall be completed using a calibrated **Flame Ionization Detector (FID).** The specific methods to be used to complete the instrument calibration and monitoring are presented in **Appendix C** and **D** of this plan.

5.2.1 Pumps

All gear pumps and centrifugal pumps affected by this plan shall be monitored monthly by methods specified in **Appendix C.** The pumps shall also be inspected visually once per week for indications of liquids dripping from the pump seal.

All diaphragm pumps shall be designated as being in "No Detectable Emissions Service" because there are no penetrations of the pump housing. These pumps shall be visually inspected weekly for indications of leakage, and monitored with an instrument at least once per year to demonstrate compliance with the emissions standards. If indications of leakage are discovered during the visual inspection, the diaphragm pumps shall be monitored with an instrument within 5 days of the discovery of the potential leak. An confirmed leaks shall be repaired within 15 calendar days.

A list of all affected pumps and the methods for compliance can be found in **Appendix A.**

5.2.2 Pressure Relief Devices

All pressure relief devices regulated under this plan shall be operated with no detectable emissions (less than 500 ppm). After each pressure release, the device shall be returned to a condition of no detectable emissions and monitored, by methods specified in **Appendix C**, to confirm no detectable emissions no later than 5 calendar days after each pressure release.

5.2.3 Sampling Connection Systems

No closed loop sampling systems are installed at the CHSI facility. All sampling is through open ended valves which have been equipped with a cap or plug which is left installed except when the valve is in use for sample collection. All purged process fluids collected during a sampling event shall be returned to the process, or to a hazardous waste tank or container that is operating in compliance with 40 CFR 264.1084 or 264.1086 standards.

5.2.4 Valves

All valves affected by this plan shall be monitored monthly by methods specified in **Appendix C**. If the instrument reading is 10,000 ppm or greater, a leak is detected. Any valve for which a leak is not detected for two successive months may be monitored the first month of every succeeding quarter, beginning with the next quarter, until a leak is detected. If a leak is detected, the valve shall be monitored monthly until a leak is not detected for two successive months.

5.2.5 Flanges and Other Connections

All affected flanges and connections such as threaded joints, welded joints, pipe unions, and pipe couplings shall be monitored, by methods specified in **Appendix C**, upon implementation of this compliance plan,and then within 5 calendar days if evidence of a potential leak is found by visual, audible, olfactory, or any other detection method. If the instrument reading is 10,000 ppm or greater, a leak is detected.

5.3 Control Device Monitoring

The control devices used at the CHSI facility are Carbon Absorption Systems that do not regenerate the carbon bed directly on site in the control device. The monitoring procedure for the control device includes:

(A) Monitoring the concentration level of the organic compounds in the exhaust vent stream from the carbon absorption system weekly and

(B) Replacing the existing carbon with fresh carbon immediately when carbon breakthrough is indicated.

The procedures for this are discussed in more detail in Section 6.2.2, "Closed Vent System and Control Device Standards" as regulated under the requirements of Subpart CC. The installed emissions control devices at CHSI are not used to control emissions from any Subpart BB regulated equipment.

5.4 Leak Detection and Identification

When a leak is detected from pumps, valves, flanges or other connections a weatherproof and readily visible identification must be attached to the leaking piece of equipment. The following information must be included on this identification:

(A) The equipment identification number.
(B) The date the evidence of a potential leak was found.
(C) The date the leak was detected.

The identification on the piece of equipment, except for a valve, may be removed after the equipment is repaired.

The identification on a valve may be removed after it has been monitored for two successive months and no leak has been detected for those two months.

5.5 Equipment Repair

If a leak has been detected in a piece of equipment that is affected by this plan, the first attempt at repair shall occur within 5 calendar days of the detection of a leak and shall be completed within 15 calendar days unless a standard for Delay of Repair is met (see sections 5.5.2 below).

5.5.1 First Attempts at Repair

First attempts at repair include, but are not limited to, the following best practices where possible:

(A) Tightening of bonnet bolts.
(B) Replacement of bonnet bolts.
(C) Tightening of packing gland nuts.
(D) Injection of lubricant into lubricated packing.

These first repair attempts are to be completed as soon as practicable after the discovery of the leak, and no later than 5 days after the discovery of the leak.

5.5.2 Delay of Repair

Repairs may be delayed under certain specific conditions. The allowable conditions are outlined in the following sections, and summarized in **Table 5.2**.

5.5.2.1 Delay of Repair by Unit Shutdown

A delay of repair will be allowed if the repair is technically infeasible without a hazardous waste management unit shutdown. If this option is selected, then the repairs shall be completed before restarting the waste management unit to service after a shut down for any reason.

5.5.2.2 Delay of Repair by Equipment Isolation

A delay of repair of equipment will be allowed if the equipment is isolated from the hazardous waste management unit and does not continue to contain or contact hazardous waste with organic concentrations at least 10 percent by weight.

Table 5.2
RCRA Air Emissions
Subpart BB - Delay of Repair

Item	Substantive Requirement	Recordkeeping/Reportign Requirement
A. Delay of Repair (General) (See Section 5.5.2.1)	1. Repair infeasible wihtout unit shutdown - 264.1059(a)	2. Record reason for delay of repair, Owner/Operator signature, Expected Date of Repair, Dates of Shutdowns - 264.1064(d)(6)-(9)
B. Delay of Repair (Out of Service) (See Section 5.5.2.2)	1. Equipmnet Isolated from Process and not in service - 264.1059(b)	2. Same as A2
C. Delay of Repair (Valves) (See Sections 5.5.2.3 & 5.5.2.4)	1. Purged Emissions greater than emissions from Delay - 264.1059(c) 2. Beyond Shutdown if stock of valve bodies is depleted - 264.1059(e)	2. Same as A2
D. Delay of Repair (Pumps) (See Section 5.5.2.5)	1. If Dual seal/Barrier fluid system is used - 264.1059(d)	2. Same as A2

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5.5.2.3 Delay of Repair for Valves by Excess Emissions from Purged Material

A delay of repair of a valve will be allowed if the emissions of purged material resulting from immediate repair are greater than the emissions likely to result from delay of repair. If this options is selected, then the purged material shall be collected and destroyed or recovered in a control device complying with control device standards when the repair is performed.

5.5.2.4 Delay of Repair for Valves by Delay of Unit Restart

For valves found to require repair during a unit shutdown, the repair may be delayed beyond the unit restart provided that valve assembly supplies have been depleted and valve supplies had been sufficiently stocked before the supplies were depleted.

Delay of repair after the next hazardous waste management unit shutdown will not be allowed unless the shutdown occurs sooner than 6 months after the first hazardous waste management unit shutdown.

5.5.2.5 Delay of Repair for Pumps

A delay of repair for a pump will be allowed if:

(A) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system; and

(B) Repair is completed as soon as practicable, but not later than 6 months after the leak is detected.

5.6 Instrument Calibration

The inspection and monitoring requirements of Subpart BB specify that the instrument used for monitoring be calibrated each day before use. Calibration is to be performed using methane or n-hexane as a reference standard (40 CFR 264.1063(b)(4)). The specific requirements and methods for calibration are included in **Appendix D**.

5.7 Record Keeping Requirements

The record keeping requirements for compliance with Subpart BB are contained in 40 CFR 264.1064. The record keeping requirements include Equipment Identification, Compliance Implementation Schedule, Leak Detection and Repair, Design Documentation, Delay of Repair and Waste Determination. The retention time for the required records is noted in each section below. Typically, design documents are required to be kept for the life of the facility, while operational records are to be kept for three years.

Appendix E contains a discussion of the design records and performance certification records required to be kept as part of the facility operating record. These design records shall be kept for the life of the facility.

5.7.1 Equipment Identification

The following information must be recorded and maintained for the life of the plant for each piece of equipment affected by this monitoring plan:

(A) Assigned equipment identification numbers.
(B) Hazardous Waste Management Unit associated with the equipment.
(C) Approximate location in the facility shown on a plot plan.
(D) Type of equipment (e.g. Pump, Valve, or Flange).
(E) Percent-by-weight total organics in the hazardous waste stream at the equipment.
(F) Hazardous waste state at the equipment (e.g. Gas, Vapor or Liquid).
(G) Method of compliance with the standard.

This information has been recorded in **Appendix A.**

5.7.2 Implementation Schedule

The CHSI facility has installed the necessary equipment, and implemented the necessary inspection and maintenance procedures to comply with the requirements of Subpart BB. No written schedule for completion of additional Subpart BB activities is required to be incorporated into this plan.

5.7.3 Leak Detection and Repair Records

When leaks are detected in any of the following equipment:

(A) Pumps in Light Liquid Service (264.1052)
(B) Compressors (264.1053)
(C) Valves in Gas/Vapor or Light Liquid Service (264.1057)
(D) Pumps and Valves in Heavy Liquid Service, Pressure Relief Devices in Light or Heavy Liquid Service, and Flanges or Other Connectors (264.1058)

The following records shall be maintained (for a period of three years):

(A) General Monitoring Information

* Monitoring instrument and equipment operator identification numbers.
* Equipment identification numbers.

(B) Leak Detection Information

* The date evidence of a potential leak was found.
* The date the leak was detected and the dates of each attempt to repair the leak.
* Repair methods applied in each attempt to repair the leak.
* "Above 10,000" if reading after each attempt is greater than 10,000

Each required inspection and repair must be recorded. An inspection and repair log form is included in **Appendix F**. This form shall be completed for each repair and entered into the facility compliance log. The inspection records shall be downloaded from the inspection equipment,and printed out by computer. The printed log shall be included in the facility compliance record.

If repairs are delayed, then the records described in section 5.7.5 shall also be maintained.

5.7.4 Design Records

Design records shall be kept up to date for the regulated emissions vents. The CHSI facility has no devices used to control emissions from Subpart BB regulated equipment therefor the requirement to record the design information does not apply.

5.7.5 Delay of Repair

If the completion of a repair is delayed beyond 15 calendar days, the following information must be recorded:

(A) "Repair delayed" and the reason for the delay if it is not repaired within 15 days.
(B) Supporting documentation for the delay.
(C) Signature of person who authorizes the delay.
(D) Expected date of repair.
(E) The date of successful repair.

The Inspection and Leak Repair form in **Appendix F** includes spaces for recording the necessary information.

5.7.6 Waste Determination

Subpart BB requires that Waste Determination documentation be kept if this information is used to claim exemptions for certain equipment Subject to Subpart BB. At the CHSI facility, all equipment is assumed to be subject to the requirements of Subpart BB, thus no waste determination documentation is retained for the purposes of compliance with this specific requirement.

5.8 Reporting Requirements

CHSI is required to report compliance activities under Subpart BB to the Regional Administrator every six months. The reporting requirements are outlined below and are found also in 40 CFR 264.1065.

5.8.1 Semi Annual Reporting Requirements

Once every six months, the facility shall submit a report to the Regional Administrator which includes the following information:

(A) The Facility EPA Identification number, the name and address of the facility.

(B) A report for each month of operations that includes:

1) The Equipment ID Number for each valve which was not repaired within 15 days of the detection of a leak.

2) The equipment ID Number for each pump which was not repaired within 15 days of the detection of a leak.

3) The equipment ID Number for each compressor which was not repaired within 15 days of the detection of a leak.

(C) Dates of Hazardous Waste Management Unit Shut Downs.

(D) Dates when the Carbon Beds used for emissions control were not serviced within 24 hours of discovery of breakthrough.

(E) Dates when tank and process emissions were not directed to the activated carbon beds for periods in excess of 24 hours.

(F) Dates when waste in excess of 10% VO content are introduced into the raffinate system.

5.8.2 Option to Not Report

If the facility does not experience any reportable events as described above, then no report is required to be filed with the Regional Administrator. This option must be reviewed each 6 months to determine if a report must be filed for the most recent six month period.

6.0 SUBPART CC - COMPLIANCE PROGRAM - AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS AND CONTAINERS

The CHSI facility has various waste management units that are regulated under the requirements of Subpart CC. This Subpart applies to tanks, surface impoundments, containers and miscellaneous units which are used to manage hazardous wastes with an average volatile organic concentration of equal to or greater than 500 ppm by weight at the "point of waste origination".

The "point of waste origination" is defined in 40 CFR 265.1081 as follows:

> For a generator, the point of waste origination is the point where a solid waste is produced, or is determined to be a hazardous waste as defined in 40 CFR 261. At CHSI, this would include wastes generated on site such as laboratory wastes or wastewater treatment sludges.
>
> For a TSDF which is not the generator of the waste, the point of waste origination is defined as the point where the facility owner or operator first accepts delivery or takes possession of the waste. At CHSI, this would be the point where the wastes first enter the facility.

6.1 Affected Units/Activities

6.1.1 Surface Impoundments

The CHSI facility does not currently operate any surface impoundments, therefore the RCRA Subpart CC requirements associated with these of units are not applicable and will not be discussed.

6.1.2 Tanks

Subpart CC established two levels of air controls for tanks: Level 1 and Level 2. Under Level 1, fixed-roof tanks may operate without emission control devices and without periodic air monitoring for leak detection provided that certain restrictions regarding tank design/operation and maximum organic vapor pressure (MOVP) limits are met. Any tank that does not qualify for Level 1 controls must comply with the Level 2 control standards which require more sophisticated emission control techniques (e.g., floating roofs, control devices, etc.) and mandatory, periodic air monitoring for leak detection.

The CHSI facility operates 10 storage tanks which are affected by Subpart CC. These tanks and their capacities are as follows:

Tank 101	12,800 gallons
Tank 102	12,800 gallons
Tank 103	12,800 gallons
Tank 104	12,800 gallons
Tank 105	12,800 gallons

Tank 106	12,800 gallons
Tank 107	12,800 gallons
Tank 109	12,800 gallons
Tank 110	12,800 gallons
Tank 112	19,600 gallons

All ten tanks are equipped with mixers to agitate the contents. These tanks are equipped with a fixed roof and a permanent submerged fill pipe, and are vented to granular activated carbon canisters. The tanks are fitted with sealed, gasketed covers which are kept closed except when opened for filling, emptying or monitoring. The tanks are not heated. These tanks are used to manage hazardous waste with a volatile organic content in excess of 500 ppmw, and shall be managed in accordance with the requirements for Level 2 tank controls.

6.1.2.1 Tank Level 1 Emission Control Standards

Level 1 tank standards are applicable if any the following criteria are met:

(A) The MOVP of the hazardous waste in the tank is less than the MOVP limit for the tank's design capacity as provided below:

(1) The tank design capacity is greater than or equal to 151 cubic meters (39,894 gallons) and the MOVP in the tank is not greater than 5.2 kPa (0.757 psia); or

(2) The tank design capacity is greater than or equal to 75 cubic meters (19,815 gallons) but less than 151 cubic meters, and the MOVP in the tank is not greater than 27.6 kPa (4.02 psia); or

(3) The tank design capacity is less than 75 cubic meters and the MOVP in the tank is not greater than 76.7 kPa (11.17 psia)

(B) The waste is not heated to a temperature that is greater than the temperature at which the MOVP was determined; and

(C) The waste is not treated using a stabilization process

All tanks operated under Level 1 controls must be equipped with a fixed roof that meets the following requirements:

(A) The fixed roof and its closure devices are designed to form a continuous barrier over the entire surface area of waste in the tank;

(B) There are no visible cracks, holes, gaps or other open spaces between the roof section joints or between the interface of the roof edge and tank wall;

(C) Each opening in the fixed roof is equipped with a closure device or connected to a closed vent that is vented to an air emissions control system; and

(D) The fixed roof and closure devices are made of materials that will minimize waste exposure to the atmosphere and maintain equipment integrity for as long as it is in service.

The bulk storage tanks have design capacities of less then 19,863 gallons each. However, since these may manage volatile organics with MOVP exceeding Level 1 criteria, the tanks will be subject to Level 2 tank emission controls.

All other tanks on-site will not be used to managed a hazardous waste with a concentration of volatile organics in excess of 500 ppmw. Therefore, all other tanks will not be subject to Subpart CC requirements.

6.1.2.2 Tank Level 2 Emission Control Standards

Any tank managing a hazardous waste containing greater than or equal to 500 ppmw that does not meet Level 1 design capacity and MOVP limitations would have to comply with Level 2 control standards. Air emissions from Level 2 tanks must be controlled using one (1) of five (5) authorized design/operation options listed below:

(A) The tank is vented through a closed vent system to a control device with a minimum organic removal efficiency of 95%;

(B) The tank is a fixed roof tank with an internal floating roof;

(C) The tank has an external floating roof;

(D) The tank is a pressure tank; or

(E) The tank is located inside an enclosure that is vented through a closed vent system to an enclosed combustion control device

As previously mentioned, the bulk storage tanks are subject to RCRA Subpart CC requirements since they manage a hazardous waste containing greater than 500 ppmw volatile organics. These tanks are equipped with granular activated carbon units designed to control air emissions. The air emission control devices are also subject to Subpart CC requirements as described in Section 6.1.3 below.

6.1.3 Closed-Vent System and Control Device Standards

In accordance with 40 CFR 265.1084(d)(3), organic vapors from storage tanks requiring Level 2 air controls must be controlled using one of five (5) authorized design/operations options. For fixed-roof tanks such as those in use at CHSI, 40 CFR 265.1084(d)(3) requires the organic vapors to be routed through closed vent systems to control equipment (e.g., carbon adsorption beds) that provides a minimum removal efficiency of 95%.

6.1.4 Fuels Blending

The fuels dispersion system is used to empty drums and to mix their contents into the waste fuels stored on site. The contents of the drums can include liquids, solids, and combinations. The drums are scraped internally by an auger mechanism, and the contents are dispersed into recirculating solvents stored in the tank farm. The fuel dispersion system is operated under a slight pressure, with nitrogen blanketing to inert the internal atmosphere. Organic emissions from the inside of the fuels dispersion unit are drawn through granular activated carbon through a closed vent system prior to discharge.

For the purposes of this Subpart CC compliance plan, the fuels dispersion system shall be considered to be a tank which is subject to the requirements of Subpart CC. The fuels dispersion system shall be operated in accordance with the requirements for Level 2 tanks controls described in Section 6.1.3 and with the closed vent and control device requirements specified in Section 6.1.4 above.

6.1.5 Containers

The RCRA Subpart CC standards for containers apply to all containers which contain a hazardous waste with a volatile organic concentration of 500 ppmv or greater. Per 40 CFR 264.1086, there are three levels of emissions controls for containers (i.e., Level 1, 2 or 3), depending on the following criteria:

(A) The design capacity of the container;

(B) Whether or not the container is being used "in light material service". The term "in light material service" means that the waste contains at least 20% (by weight) organic constituent(s) that have (in pure form) a vapor pressure equal to or greater than 0.3 kilopascals (0.044 psia); and

(C) The use of the container for stabilization treatment processes.

Per 40 CFR 264.1086(c), **Level 1** container standards apply to:

(A) Containers with a design capacity between 26 and 119 gallons; or

(B) Containers with a design capacity greater than 119 gallons and containing a hazardous waste that is not "in light material service". For a non-DOT container with a capacity greater than 119 gallons, the facility must maintain a copy of the procedure used to determine that the container is not "in light material service".

Per 40 CFR 264.1086(d), **Level 2** container standards apply to containers with a design capacity exceeding 119 gallons and containing a waste that is "in light material service".

Per 40 CFR 264.1086(e), **Level 3** container standards apply to containers with a design capacity greater than 26 gallons which are used in a stabilization treatment process.

The specific management and air emission emission control requirement for the three levels of controls are described in Sections 6.1.5.1 through 6.1.5.3 below.

6.1.5.1 Level 1 Emission Control Standards for Containers

Level 1 container emission control standards require the use of one of the following types of containers:

(A) A container that meets U.S. DOT packaging regulations specified in 49 CFR 178 and 179; or

(B) A container that is equipped with a cover and closure devices that form a continuous barrier over the container openings such that when secured, there are no visible holes, gaps, or other open spaces into the interior of the container. The cover may be a separate cover (e.g., lid on a drum, tarp on a rolloff) or may be an integral part of the container structural design (e.g., a portable tank); or

(C) An open-top container in which an organic-vapor suppressing barrier is placed on or over the hazardous waste such that no hazardous waste is exposed to the atmosphere (e.g., a vapor suppressing foam).

Under Level 1 controls, all covers and closure devices must be composed of materials that are suitable to minimize waste exposure to the atmosphere and maintain equipment integrity for as long as it is in service. In addition, covers and closure devices must be secured and closed at all times, except in the following cases:

(A) Adding waste or other material is allowed, provided:

(1) For continuous filling to the final level, closure devices and covers must be secured upon conclusion of the filling operation.

(2) For intermittent filling to final level, closure devices and covers must be re-secured/re-closed when:
(a) Final volume is reached
(b) Completion of batch with no material additions within 15 minutes
(c) Person loading the container leaves the immediate vicinity, or
(d) Process generating the waste is shutdown

(B) Removing waste is allowed, provided:

(1) RCRA-empty containers (per 261.7(b)) do not require a secured/closed cover or closure device

(2) For intermittent removal operations, the closure and covers must be re-secured/re-closed when:
(a) Removal operation is complete but container is not RCRA-empty
(b) Completion of batch with no material removals within 15 minutes, or
(c) Person unloading the container leaves the immediate vicinity.

(C) Opening of a closure device or cover is allowed when access to the inside of the container is needed to perform routine activities other than transfer operations. Examples include opening ports or manholes to sample the waste or access equipment in the container. Following completion of the activity, the cover or closure device must be secured/closed.

(D) Pressure-relief, conservation vents, and similar devices which vent to the atmosphere are allowed during normal operating conditions for the purpose of maintaining container internal pressure in accordance with the design specifications of the container. The device must be designed to operate with no detectable emissions when the device is secured in the closed position. The setting of the device must be established based on manufacturer recommendations, fire protection codes, standard engineering practices, etc.

All "DOT containers" that are used to comply with Level 1 (or Level 2) container controls must meet the following DOT regulations on packaging of hazardous materials:

(A) The container must comply with:

(1) 49 CFR 178 - Specifications for Packaging, or
(2) 49 CFR 179 - Specifications for Tank Cars.

(B) The hazardous waste is managed in the container in accordance with:

(1) 49 CFR 107, Subpart B - Exemptions
(2) 49 CFR 172 - HMT, Special Provisions, Communication, Emergency Response, & Training
(3) 49 CFR 173 - General Requirements for Shippers and Packages
(4) 49 CFR 180 - Continuing Qualification and Maintenance of Packagings

DOT exception packagings allowed in 49 CFR Part 178 & 179 are not considered to be "DOT containers" that are exempt from Subpart CC air controls/monitoring, and must be managed under Level 2 controls (i.e. operate with no detectable emission, or as a "vapor-tight" container). However, lab packs that are packed in accordance with 49 CFR 173.12(b) and managed in accordance with 49 CFR 178 are considered to be "DOT containers" for the purposes of complying with Subpart CC.

6.1.5.2 Level 2 Emission Control Standards for Containers

Level 2 container emission control standards require the use of one of the following types of containers:

(A) A container that meets U.S. DOT packaging regulations; or

(B) A container that operates with "no detectable organic emissions" as determined through the monitoring of all closures using a PID, FID, or similar instrument in accordance with 40 CFR 264.1086(g); or

(C) A container that has been demonstrated within the preceding 12 months to be vapor-tight using Method 27 in 40 CFR 60 Appendix A in accordance with with 40 CFR 264.1086(h).

Transfers in/out of a Level 2 container must be conducted in a manner that minimizes exposure of hazardous waste to the atmosphere. Examples of acceptable loading procedures include submerged fill, vapor balancing, or vapor recovery.

The procedure specified in 265.1084(d) must be used to demonstrate that a container is operating with no detectable organic emissions. Under that procedure, each potential leak interface on the container, cover, and associated closure devices must be checked. Interfaces include,

but are not limited to, the interface of the cover rim and the container wall, the periphery of any opening on the container, and the sealing seat interface on a spring-loaded pressure-relief valve. The test must be conducted when the container is filled with a material having a VO concentration representative of the VO concentrations for the hazardous waste expected to managed in the container. The cover and all closure devices must remain closed during the test.

The procedure specified in 40 CFR 60 Appendix A, Method 27, must be used to demonstrate that a container is vapor-tight. The test must be performed in accordance with Method 27 requirements using a pressure measurement device that has a precision of +/- 2.5 mm water and that is capable of pressure measurements above the pressure at which the container is to be tested. The container is considered vapor-tight when it sustains a pressure change of less than or equal to 750 Pascals within 5 minutes after it is pressurized to a minimum of 4,500 Pascals.

6.1.5.3 Level 3 Emission Control Standards for Containers

Level 3 container emission control standards require the use of one of the following types of containers:

(A) A container that is vented directly through a closed-vent system to a control device operating in accordance with 40 CFR 264.1086(e)(2)(ii); or

(B) A container that is vented into an enclosure which is exhausted through a closed-vent system to a control device in accordance with 40 CFR 264.1086(e)(2)(i) and (e)(2)(ii).

A Level 3 closed-vent system and control device must be designed and operated in accordance with 40 CFR 265.1088. A Level 3 container enclosure must be designed and operated in accordance with the permanent total enclosure criteria in 40 CFR 52.741, Appendix B (i.e., "Procedure T"). The Procedure T verification procedures must be conducted when the enclosure is first installed, and annually thereafter.

Level 3 container controls must be inspected and monitored in accordance with 40 CFR 265.1088. In addition, owners/operators of Level 3 container controls must prepare and maintain the records specified in 40 CFR 265.1090.

CHSI does not currently operate any containers subject to Level 3 control requirements at this time. Only wastes containing less than 500 ppmw will be stabilized on-site.

6.1.6 Miscellaneous Units

There are currently no Subpart X permitted or regulated units in operation at the CHSI facility.

6.2 Inspection/Monitoring Requirements

As discussed in Section 6.1, above, the only regulated units presently subject to Subpart CC at the CHSI facility are tanks (and their associated closed vents and emission control devices) and containers. The inspection and monitoring requirements applicable to these units are provided below.

6.2.1 Tanks

A summary of inspection requirements for tanks subject to Subpart CC is provided in **Table 6-1**.

Both Level 1 and Level 2 tanks require a visual inspection to check for defects including, but not limited to:

(A) Visible cracks, holes or gaps in the roof sections or between the roof and the tank wall;

(B) Broken, cracked or otherwise damaged seals or gaskets on closure devices; and

(C) Broken or missing hatches, access covers, or other closure devices.

This visual inspection must be conducted on or before the effective date of the rule (December 6, 1996) and annually thereafter. The results of the inspections must be documented and maintained on-site.

If a defect is noted during an inspection, the first efforts at repair of the defect must occur no later than five (5) calendar days after detection, and shall be completed as soon as possible, but no later than forty five (45) calendar days after detection. Repair of the defect may be delayed beyond 45 days if the repair requires emptying or temporarily removing the tank from service for repair and no alternative tank capacity is available at the facility to accept the waste that is normally managed in the defective tank. In the case of a delayed repair, the repair shall be made the next time the process or unit that is generating the waste managed in the defect tank stops operation. Repair of the defect shall be completed before the process or unit resumes operation.

6.2.2 Closed-vent System and Control Devices

Any closed vent and control device systems installed for the purpose of complying with Subpart CC shall be inspected in accordance with 40 CFR 264.1033(k)(1). Upon initial operation, all potential leak interfaces shall be visually inspected for cracks, gaps, holes, or other defects, and the system shall be tested using the leak detection procedures at 40 CFR 264.1034(b) to determine that the system is operating with no detectable organic emissions (i.e., organic concentration less than 500 ppmv above background). The visual inspection and leak detection shall

Table 6.1
Subpart CC Affected Equipment Other Than Containers
Clean Harbors Services, Inc.

Inspection and Monitoring Requirements

Affected Equipment	Difficult to Inspect	Performance Requirements	Inspection Requirements	Monitoring Requirements
Tanks				
Tank Farm Pegasus System	No	Level 2 Controls	Initially and every 12 months	None
Closed Vent Systems				
Tank Farm Pegasus System	No	Level 2 Controls GAC: 95% organic removal	Initially and every 12 months	Initially and every 12 months
Waste Stabilization	No	Process waste with VO less than 500 ppm	Not Required	Not Required

Key:

VO: Volatile Organic concentration as determined using EPA method 25D, or other analytical method per 40 CFR 265.1084(a)(3)

Inspection means: Visually inspect all mating surfaces, sealing surfaces, and openings for indications of leakage. Visually inspect all connectors, fasteners and closure caps for proper installation.

Monitoring Means: Testing for the presence of volatile organic compounds using a calibrated instrument. The testing procedures and Calibration procedures are contained in Appendix C & D.

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be repeated at least once annually, and after all repairs/replacement activities.

Repairs of the closed vents and control systems shall be conducted in accordance with the requirements of 40 CFR 264.1033(l)(3). That is, the first effort at repair shall be made no later than 5 days after detection of the defect, with all repairs being completed within 15 days of detection. Delay of repair is allowed only in cases where it is technically infeasible to conduct the repair without a shutdown of the system, or if the emissions from the repair activity would exceed the emissions which would occur if repair are delayed until the next planned shutdown.

The carbon shall be replaced when "breakthrough" is detected. Breakthrough shall be determined based on weekly monitoring of the organic emissions. Replacement upon breakthrough is required in accordance with 40 CFR 264.1033(h). The absorber systems for the tanks consist of two canisters in series. Breakthrough of the carbon system shall be deemed to have occurred when the outlet concentration of total VOC's from the first canister is greater than 15% of the inlet VOC concentration. This shall be calculated by the following:

$$\frac{\text{VOC (outlet)}}{\text{VOC (inlet)}} \times 100 > 15$$

The first carbon unit shall be replaced within 24 hours of breakthrough. Service shall be completed by removing the primary canister and replacing it with the secondary canister, and then installing a new canister in the secondary position. This will ensure full utilization of all carbon beds. One spare canister shall be kept on-site to ensure that replacement can be completed as required. VOC concentration will be determined using a **Flame Ionization Detector (FID)**. The FID will be calibrated prior to each use in accordance with the manufacturer's instructions using a detection limit of 10 ppm or less of methane or n-hexane in air. Calibration methods are included in **Appendix D**.

6.2.3 Containers

The CHSI facility manages hazardous wastes in a variety of containers. Subpart CC requirements differ based on the capacity of the container, whether it holds hazardous waste that is "in light material service", and whether the container is to be used for stabilization treatment processes.

The regulatory requirements for each of the container classes is presented here. The requirements for containers are also summarized below and in **Table 6.2**.

Table 6.2

RCRA Air Emissions Subpart CC
Inspection, Leak Detection, and Transfer Requirements for Containers

I. LEVEL 1 CONTAINERS

A. Inspection Requirements

1. Inspection of covers and closure devices is required within 24 hours after a non-RCRA empty container is accepted at the facility.
2. Any container remaining at the facility for 1 year or more must be re-inspected.
3. During an inspection, the facility must inspect the container and its cover and closure devices to check for visible cracks, holes, gaps, or other open spaces into the interior of the container.
4. Recordkeeping of inspections is not required for containers.
5. If a defect is detected during an inspection, the first effort at repair must be within 24 hours of detection, and completed as soon as possible but within 5 calendar days.
6. If the repair cannot be completed within 5 days, then the waste must be removed from the container. The container cannot be reused until the defect is repaired.

B. Leak Detection & Air Monitoring

1. Air monitoring for containers is not required at time of receipt or re-shipment.

C. Waste Transfer Requirements

1. No submerged fill or other transfer techniques required.

II. LEVEL 2 CONTAINERS

A. Inspection Requirements

1. Inspection of covers and closure devices is required within 24 hours after a non-RCRA empty container is accepted at the facility.
2. Any container remaining at the facility for 1 year or more must be re-inspected.
3. During an inspection, the facility must inspect the container and its cover and closure devices to check for visible cracks, holes, gaps, or other open spaces into the interior of the container.
4. Recordkeeping of inspections is not required for containers.
5. If a defect is detected during an inspection, the first effort at repair must be within 24 hours of detection, and completed as soon as possible but within 5 calendar days.
6. If the repair cannot be completed within 5 days, then the waste must be removed from the container. The container cannot be reused until the defect is repaired.

B. Leak Detection & Air Monitoring

1. Air monitoring for containers is not required at time of receipt.
2. Prior to shipment, non-DOT containers must be monitored for NDOE, unless the container is demonstrated to be "vapor-tight" within previous 12 months.

C. Waste Transfer Requirements

1. Transfers in/out of a Level 2 container must be conducted in a manner that minimizes exposure of hazardous waste to the atmosphere. Examples of acceptable loading procedures include submerged fill, vapor balancing, or vapor recovery.

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6.2.3.1 Containers Less Than 26 Gallons Design Capacity

Containers with a design capacity of less than 26 gallons are exempt from RCRA Subpart CC regardless of the VO concentration of the hazardous waste.

6.2.3.2 Containers Between 26 and 119 Gallon Design Capacity

CHSI accepts hazardous waste in containers with a design capacity between 26 and 119 gallons. Some of these containers may contain hazardous waste which has a volatile organic concentration of 500 ppm or greater and is subject to RCRA Subpart CC standards.
To ensure consistency and ease of implementation, CHSI shall assume that all containers with a design capacity between 26 and 119 gallons are subject to Subpart CC, even if the container in fact contains waste with less than 500 ppmv volatile organic concentration. Containers between 26 and 119 gallons which contain a hazardous waste with equal to or greater than 500 ppmw volatile organics are subject to Level 1 container standards.

Containers between 26 and 119 gallons design capacity which are received at CHSI may be designed to meet a DOT performance specification under 49 CFR Part 178, or may be non-DOT or DOT-exemption packaging.

Containers that meet the definition of "RCRA-empty" under 40 CFR 261.7 are exempt from Subpart CC requirements.

Under Subpart CC, the **Level 1** inspection requirements for DOT containers, non-DOT containers, and DOT-exemption packaging with a design capacity between 26 and 119 gallons are the same, and are provided below:

(A) All non-RCRA empty containers will be visually inspection within 24-hours after they are accepted at the CHSI facility. The inspection shall be conducted to ensure that the container is equipped with a cover and closure devices that form a continuous barrier over the container openings such that when secured, there are no visible holes, gaps or other open spaces into the interior of the container. The inspection will be conducted as part of the facility's normal waste receiving procedures (i.e., at the same time as the facility's conformance testing). Documentation of the visual inspection is not required.

(B) Any container in storage for more than one year from the date of receipt shall be visually re-inspected.

If a defect is detected during an inspection, the first effort at repair must be made within 24-hours of inspection and completed as soon as possible, but no later than 5 calendar days from receipt. If the repair cannot be completed within 5 days, then the waste must be removed from the container or the container must be overpacked in a compatible DOT salvage drum.

6.2.3.3 Containers Greater Than 119 Gallon Design Capacity

CHSI accepts hazardous waste in containers with a design capacity greater than 119 gallons. Some of these containers may contain hazardous waste which has a volatile organic concentration of 500 ppm by weight or greater and are subject to RCRA Subpart CC standards. Containers greater than 119 gallons design capacity which are received at CHSI may be designed to meet a DOT performance specification under 49 CFR Part 178/179, or may be non-DOT or DOT-exemption bulk packagings. Examples of containers with a design capacity of greater than 119 gallons include tank truck, vacuum truck, tote tanks, flex bins, intermodal containers and rolloffs.

Under Subpart CC, the Level 1 and Level 2 inspection requirements (e.g., inspections, no air monitoring, etc.) for DOT containers, Non-DOT containers and DOT-exemption containers are identical. Therefore, the inspection requirements that apply to Level 1 and Level 2 containers greater than 119 gallons are:

(A) The container will be visually inspection within 24 hours after a non-RCRA empty container is accepted at the CHSI facility. The inspection shall be conducted to ensure that the container is equipped with a cover and closure devices that form a continuous barrier over the container openings such that when secured there are not visible holes, gaps or other open spaces into the interior of the container. The inspection will be conducted as part of the facility's normal waste receiving procedures (i.e., at the same time as the facility's conformance testing). Documentation of the visual inspection is not required.

(B) Any container in storage for more than one year from date of receipt shall be visually re-inspected.

If a defect is detected during an inspection, the first effort at repair must be made within 24 hours of inspection and completed as soon as possible but no later than 5 calendar days from receipt. If the repair cannot be completed within 5 days, then the waste must be removed from the container or the container must be overpacked in a compatible DOT salvage drum.

In addition to these inspection requirements, additional requirements apply to containers that are greater than 119 gallons capacity. These additional requirements depend on type of packaging and whether the hazardous waste within the container is "in light material service". These additional requirements are discussed below.

6.2.3.3.1 DOT Packagings Greater Than 119 Gallons

Containers of hazardous waste that have a design capacity of greater than 119 gallons, that operate "in light material service", and that meet a DOT design specification in 49 CFR 178/179 are subject to the Level 1 inspection, filling/emptying, and opening/closing requirements described in Sections 6.1.5.1 and 6.2.3.2 above. In addition, the following requirements apply:

(A) Waste transfer operations involving containers requiring Level 2 controls must be conducted to minimize exposure of hazardous waste to the environment. Acceptable loading procedures include, but are not limited to, the use of submerged fill, vapor balancing, or vapor recovery techniques.

(B) If a container is downgraded to Level 1 controls because it is not operating "in light material service", the facility must keep a copy of the procedure that was used to determine that the container is not in light material service. For the purposes of complying with this requirement, such determinations shall be made during the initial waste prequalification process based on information provided by the generator.

6.2.3.3.2 Non-DOT and DOT-Exemption Packagings Greater Than 119 Gallons

Containers of hazardous waste that have a design capacity of greater than 119 gallons, that are used "in light material service", and that do not meet a DOT design specification in 49 CFR 178/179 (i.e., "non-DOT containers") or that are designed, manufactured and operated pursuant to a DOT-exemption are subject to the Level 1 inspection, filling/emptying, and opening/closing requirements described in Sections 6.1.5.1 and 6.2.3.2 above. In addition, the following requirements apply:

(A) Waste transfer operations involving containers requiring Level 2 controls (i.e., one that is operating "in light material service") must be conducted to minimize exposure of hazardous waste to the environment. Acceptable loading procedures include, but are not limited to, the use of submerged fill, vapor balancing, or vapor recovery techniques;

(B) If a container is downgraded to Level 1 controls because it is not operating "in light material service", the facility must keep a copy of the procedure that was used to determine that the container is not in light material service. For the purposes of complying with this requirement, such determinations shall be made during the initial waste prequalification process based on information provided by the generator; AND

(C) Level 2 containers must operate with "no detectable organic emissions". Such container must be checked (e.g., by PID, FID, or other instrument) for leaks at all container/closure interfaces. The leak detection test is required at the point of generation. CHSI need not conduct a leak test when such a container arrives at the facility, but would have to conduct the leak test when generating an outbound load of hazardous waste; **OR**

(D) Level 2 containers must operate as a "vapor-tight" containers. Such container must be tested using EPA Method 27. The vapor-tight test is required prior to initial use of the container. CHSI need not conduct a "vapor-tight" test when such a container arrives at the facility, but would have to ensure that such a container was tested within the previous 12 months prior to using the container for an outbound load of hazardous waste.

6.2.4 Lab Packs

The CHSI facility manages lab packs. These containers are considered to comply with Level 1 container controls provided that they are packed in accordance with the requirements of 49 CFR 173.12.

6.2.5 Waste Stabilization Activities

Under Subpart CC, waste stabilization activities (in containers) that involve hazardous wastes with a volatile organic concentration equal to or greater than 500 ppmv must be conducted using Level 3 air controls. Level 3 controls require that the process be conducted inside an enclosure that is vented to an air pollution control system.

CHSI is authorized to conduct hazardous waste stabilization activities in containers. However, in order to comply with Subpart CC, CHSI shall limit its stabilization activities to those hazardous wastes which have a volatile organic concentration of less than 500 ppmv. Stabilization of such wastes is exempt from Subpart CC requirements. CHSI shall ensure that any waste to be treated using stabilization techniques has a volatile organic concentration of less than 500 ppmv based on the GWMPS profile information provided to CHSI by the original generator of the hazardous waste stream.

6.2.6 Miscellaneous Equipment

There are currently no Subpart X permitted or regulated units in operation at the CHSI Facility.

6.3 Record Keeping Requirements

All Subpart CC records shall be kept for a minimum of three (3) years. Design information, equipment certification information, and design analyses of performance tests shall be kept in the facility records for the life of the equipment. Unit specific recordkeeping requirements are provided below and as summarized in **Table 6.3**.

6.3.1 Tanks

The following information shall be recorded for those tanks subject to Subpart CC at CHSI:

(A) Tank identification number, or other unique identifier;

(B) A record of each inspection required by 40 CFR 265.1085, including:

(1) Date of inspection

(2) For each defect identified:
- (a) Location of the defect
- (b) Description of the defect
- (c) Date of detection
- (d) Corrective action taken to repair the defect
- (e) Reason for delay of repair (if any)
- (f) Expected date of completion of delayed repair

(C) For a fixed roof Level 1 control tank, the MOVP determination performed in accordance with 40 CFR 265.1085 (At this time, all tanks subject to Subpart CC at CHSI will comply with Level 2 controls).

(D) For an enclosure complying with Level 2 controls per 40 CFR 265.1085(i), the most recent "Procedure T" verification calculations and measurements, and all records required for closed vent system and control device (At this time, CHSI does not operate any "enclosures" subject to Subpart CC).

(E) Information concerning units that are "unsafe to inspect and monitor" per 40 CFR 265.1085(l) or 265.1086(g):

(1) Identification numbers for units with covers that have been designated "unsafe to inspect and monitor"

Table 6.3

RCRA Air Emissions Subpart CC
Recordkeeping and Reporting Requirements

I. GENERAL RECORDKEEPING

1. For units managing exempted waste per 40 CFR 265.1083(c):
   A. If exempted per 265.1083(c)(1) or (c)(2):
      - Information used for each waste determination (e.g., test results, measurements, calculations, other information) to demonstrate that the VO concentration of a waste entering a unit is less than 500 ppmv or meets applicable VO destruction/removal criteria.
      - If analysis is used, record date, time, and location of each sample

   B. If exempted per 265.1083(c)(2)(vii) or (c)(2)(viii) because the receiving unit is a thermal treatment unit:
      - The identification number for the incinerator, boiler, or industrial furnace in which the hazardous waste is treated.

2. All Subpart CC records shall be kept for a minimum of three years

3. Design information, equipment certification information,and design analyses or performance test shall be kept in the facility records for the life of the equipment.

II. TANK RECORDKEEPING

1. Tank ID number, or other unique identifier

2. A record of each inspection required by 265.1085, including:
   A. Date of inspection
   B. For each defect:
      - Location of the defect
      - Description of the defect
      - Date of detection
      - Corrective action taken to repair the defect
      - Reason for delay of repair
      - Expected date of completion for delayed repair

3. For a fixed-roof Level 1 control tank
   - The MOVP determination performed in accordance with 265.1085
   - The record shall include date/time of sample collection, analysis method, and analysis results

4. For an enclosure complying with Level 2 controls per 265.1085(i)
   - The most recent "Procedure T" verification calculations and measurements, and all records required for closed-vent system and control device.

5. Units that are "unsafe to inspect and monitor" per 265.1085(l) or 265.1086(g):
   - Identification numbers for units with covers that designated
   - Explanation for each cover stating why the cover is unsafe to inspect/monitor
   - Description of the plan and schedule for inspection/monitoring

6. Units at facilities covered by 40 CFR 60, Subpart VV or 40 CFR 61, Subpart V may elect to comply with those documentation requirements (in lieu of Subpart CC documentation requirements) to the extent that the VV/V documentation duplicates the 40 CFR 265.1090 requirements.

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III. CONTAINER RECORDKEEPING

1. Containers using Level 1 or Level 2 controls do not require any recordkeeping, except in the case of a container that is downgraded to Level 1 controls because it is not operating "in light material service". In such cases, the facility must keep a copy of the procedure that was used to determine that the container is not in light material service.

2. For container Level 3 air emission controls, the facility must maintain the following:
   - Most recent "Procedure T" verification calculations and measurements;
   - Records required for closed-vent systems and control devices

3. Units at facilities covered by 40 CFR 60, Subpart VV or 40 CFR 61, Subpart V may elect to comply with those documentation requirements (in lieu of Subpart CC documentation requirements) to the extent that the VV/V documentation duplicates the 40 CFR 265.1090 requirements.

IV. CLOSED-VENT SYSTEM AND CONTROL DEVICE RECORDKEEPING

1. A signed/dated certification that the control device is designed to operate at a performance level documented by a design analysis specified in (e)(1)(ii), or by performance test as specified in (e)(1)(iii) when the unit is or would be operating at capacity or the highest level reasonable expected to occur;

2. If a design analysis is used, then the design information as specified in 265.1035(b)(4), information prepared by the owner operator or provided by the manufacturer/vendor which describes the control device design in accordance with 264.1035(b)(4)(iii), and a certification by the owner/operator that the control equipment meets the applicable specifications;

3. If performance tests are used, then a performance test plan as specified in 265.1035(b)(3) and all test results;

4. Per 265.1035(c)(1) and (c)(2), as applicable, a description and date of each modification that is made to the closed vent system or control device design, the identification of operating parameters, a description of monitoring devices, and a diagram of monitoring sensor location(s);

5. On a semiannual basis, the following information for all planned routine maintenance operations that require the control device to not meet the requirements of 265.1088(c)(1)(i)-(iii), as applicable:
   A. A description of the planned events to be performed during the next 6-month period, including type of maintenance, planned frequency of maintenance, and length of maintenance period.
   B. A description of the planned events that were performed during the previous 6-month period. Shall include the type of maintenance performed and the total number of hours during the 6 months when the control device did not meet 265.1088(c)(1)(i)-(iii) due to the planned maintenance.

6. For all unexpected control device system malfunctions that would require the control device to not meet the requirements of 265.1088(c)(1)(i)-(iii), the following information:

   A. Occurrence and duration of each malfunction;
   B. Duration of each period when emissions are fed to the control device when the control device is not functioning properly;
   C. Actions taken during the malfunction period to restore the unit to its normal manner of operation

7. Units at facilities covered by 40 CFR 60, Subpart VV or 40 CFR 61, Subpart V may elect to comply with those documentation requirements (in lieu of Subpart CC documentation requirements) to the extent that the VV/V documentation duplicates the 40 CFR 265.1090 requirements.

8. Records of management of carbon removed from a carbon adsorption unit conducted in accordance with 265.1088(c)(3)(ii)

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V. REPORTING REQUIREMENTS

1. Under Subpart AA and BB, then the facility must report the following to the Regional Administrator within 15 days (264.1090).

   - Each occurrence when hazardous waste containing VO in excess of 500 ppmw is placed into a container which is not part of this plan or has not been designated as complying with this plan (e.g., into a "exempt" unit).

2. The facility currently operates under 40 CFR 265 Subpart CC which does not include any reporting requirements. However, upon issuance of a final permit which requires compliance with 40 CFR 264 Subpart CC reporting requirements, the following shall apply:

   - For activated carbon control systems are installed to manage emissions from Subpart CC regulated equipment, the following shall be reported every six months:

     * Each occurrence when the Activated Carbon systems were not maintained within 24 hours after the detection of breakthrough as described above. This report is not required if no events or upsets have occurred within the past six months.

(2) An explanation for each cover stating why the cover is unsafe to inspect and monitor

(3) A description of the plan and schedule for inspection/monitoring

(F) Units covered by the Benzene NESHAPS standards in 40 CFR Part 60 Subpart VV or 40 CFR Part 61 Subpart V may elect to comply with those documentation requirements in lieu of the Subpart CC documentation requirements to the extent the VV/V documentation duplicates the 40 CFR 265.1090 requirements (CHSI will comply with the Subpart CC documentation requirements).

6.3.2 Closed Vent Systems and Emission Control Devices

The following information will be maintained for the closed vent systems and emission control devices subject to Subpart CC (i.e., the closed vent systems and the granular activated carbon units associated with the bulk storage tanks and the fuels dispersion system):

(A) Signed and dated certification that the control device is designed to operate at a performance level documented by a design analysis as specified in (1) or by the performance test specified in (2), below:

(1) Design Analysis - If design analysis is used, then the following design information specified in 40 CFR 265.1035(b)(4) must be documented and maintained:

(a) A list of information references and sources used in preparing the documentation
(b) A design analysis, specifications, drawings, schematics, and piping and instrumentation diagrams based on the appropriate sections of "APTI Course 41: Control of Gaseous Emissions or other engineering texts acceptable to the Regional Administrator that present basic control device design information
(c) For carbon adsorption systems that do not regenerate on-site, the design analysis shall consider the vent stream composition, constituent concentrations, flow rate, relative humidity, and temperature. The design analysis shall also establish the design outlet organic concentration level, capacity of the carbon bed, type and working capacity of the activated carbon used for the carbon bed, and design carbon replacement interval based on the total carbon working capacity of the control device and source operating schedule

(d) A statement signed and dated by the owner/operator certifying that the operating parameters used in the design analysis reasonably represent the conditions that exist when the hazardous waste management unit is or would be operating at the highest load or capacity level reasonably expected to occur.

(e) A statement signed and dated by the owner/operator certifying that the control device is designed to operate at 95% efficiency or greater unless the total organic concentration limit of 40 CFR 265.1032(a) is achieved at an efficiency less than 95%wt. or the total organic emission limits of 265.1032(a) for affected process vents at the facility can be attained by a control device involving vapor recovery at an efficiency less than 95%wt. A statement provided by the control device manufacturer or vendor certifying that the control equipment meets the design specifications may be used to comply with this requirement.

(2) If performance testing is used, then the following design information specified in 40 CFR 265.1035(b)(3) must be documented and maintained:

(a) A test plan which includes the following:

* A description of how it is determined that the planned test is going to be conducted when the hazardous waste management unit is operating at the highest load or capacity level reasonably expected to occur. Shall include the estimated or design flow rate and organic content of each vent stream and define the acceptable operating ranges of key process and control device parameters during the test program
* A detailed engineering description of the closed vent system and control device including:
  - Manufacturer's name and model number
  - Type of control device
  - Dimensions
  - Capacity
  - Construction materials
* A detailed description of sampling and monitoring procedures, including sampling and monitoring locations, equipment to be used, sampling and monitoring frequency and planned analytical procedures for sample analysis

(b) All results and data from the performance test

(B) Design documentation and monitoring, operating and inspection information for each closed vent control system and control device shall be recorded and kept up-to-date. This information shall include:

(1) Description and date of each modification that is made to the closed vent system or control device design

(2) Identification of operating parameters, description of monitoring devices, and diagram of monitoring sensor location(s) used to comply with 40 CFR 265.1033(f)(1) and (f)(2).

(C) On a semiannual basis, the following information shall be recorded and maintained for all planned, routine maintenance of the carbon adsorption systems which results in the carbon system failing to reduce the total organic content of the inlet vapor stream by at least 95% by weight:

(1) A description of the planned events to be performed during the next 6-month period, including type of maintenance, planned frequency of maintenance, and length of maintenance period

(2) A description of the planned events that were performed during the previous 6-month period, including the type of maintenance performed and the total number of hours during the 6 month period when the device did not achieve at least 95% removal efficiency due to planned maintenance

(D) The following information shall be recorded and maintained for all unexpected malfunctions of the carbon adsorption systems which result in the carbon system failing to reduce the total organic content of the inlet vapor stream by at least 95% by weight:

(1) Occurrence and duration of each malfunction

(2) Duration of each period when emissions are fed into the carbon adsorption unit when the unit is not properly functioning

(3) Actions taken during the malfunction period to restore the unit to its normal manner of operation

(E) Records of management of carbon removed from a carbon adsorption unit. Note, per 40 CFR 265.1088(c)(3)(iii), all carbon removed from the control devices shall be managed per the requirements of 40 CFR 265.1033(m) below regardless of the volatile organic concentration:

(1) Regenerated/reactivated in a Subpart X unit;

(2) Incinerated as a hazardous waste

(3) Burned in an industrial furnace or boiler

6.3.3 Containers

Containers using Level 1 or Level 2 controls do not require any recordkeeping, except in the case where a container is downgraded to Level 1 controls because it is not operating "in light material service". In such cases, CHSI will keep a copy of the procedure used to determine that the container is not in light material service.

CHSI does not intend to operate any containers in Level 3 service. Therefore, the recordkeeping requirements that apply to Level 3 are not applicable.

6.4 Reporting Requirements

There are no reporting requirements applicable to CHSI under the 40 CFR Part 265, Subpart CC regulations.

Appendix A

Subpart BB Regulated Equipment and Processes

Table 6.3
Clean Harbors of Chicago, Inc.
Subpart CC Affected Equipment

Record Keeping, Repair and Reporting Requirements

Affected Equipment	Record Keeping Requirements	Repair Requirements	Reporting Requirements
Tanks			
Tank 101	Visual Inspection Results for Each Cover and Fitting Instrument Monitoring Results for Each Cover and Fitting Documentation of Repair dates and delays	Initial Attempt within 5 days, Completed within 15 days unless allowable delay.	Every Six Months Periods operating without controls in excess of 24 hrs
Tank 102	Same as Tank 101	Same as Tank 101	Same as Tank 101
Tank 103	Same as Tank 101	Same as Tank 101	Same as Tank 101
Tank 104	Same as Tank 101	Same as Tank 101	Same as Tank 101
Tank 105	Same as Tank 101	Same as Tank 101	Same as Tank 101
Tank 106	Same as Tank 101	Same as Tank 101	Same as Tank 101
Tank 107	Same as Tank 101	Same as Tank 101	Same as Tank 101
Tank 109	Same as Tank 101	Same as Tank 101	Same as Tank 101
Tank 110	Same as Tank 101	Same as Tank 101	Same as Tank 101
Tank 112	Same as Tank 101	Same as Tank 101	Same as Tank 101
Fuels Dispersion			
Drum Movement Chamber	Same as Tank 101	Same as Tank 101	Same as Tank 101
Drum Dumping Chamber	Same as Tank 101	Same as Tank 101	Same as Tank 101
Dispersion Tank	Same as Tank 101	Same as Tank 101	Same as Tank 101
Pump Feed Chamber	Same as Tank 101	Same as Tank 101	Same as Tank 101
Carbon Systems			
Tanks & Truck Fill	Record Monitoring Results	Initial attempt within 5 days, completed within 15 days unless allowable delay	Every 6 Months, Periods when monitoring was missed, or when changeout did not occur within 24 hours as specified.
Fuels Dispersion	Same as Tanks	Same as Tanks	Same as Tanks
Closed Vent Systems			
Tanks & Truck Fill Fuels Dispersion	Record Inspection and monitoring results	Same as Tank 101	Same as Tank 101
Waste Stabilization	Record Wastes Processed with VO Concentration in excess of 100 ppmw	N/A	Report waste processed w/VO Concentration in excess of 100 ppmv and w/o vent to control
Containers	Record Monitoring Results for Non Specification Containers, larger than 119 gallons	For All Containers Repair or Replace Immediately	None
	Record Test Results for Vehicle Containers	Repair or Replace Immediately	None

Revision Date: June 15, 1995

APPENDIX A
List of Subpart BB Regulated Equipment
Clean Harbors of Chicago, Inc.
as of15-JUN-1995

PUMPS

Fuels Dispersion System

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
1	P-167	Return Pump	Air Op. Dbl Diaphragm	LL	No Detectable Emissions, Monitor Annually

0002-0005 Reserved for Future Use

Tank Farm

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
6	P-162	TK-112 Rcv Pump	Cent. w/DS & BF	LL	Inspect Weekly, Sensor Daily, Alarm Monthly
7	P-176	Port Xfer Pump	Air Op. Dbl Diaphragm	LL	No Detectable Emissions, Monitor Annually
8	P-178	TK-112 Rcv Pump	Cent. w/DS & BF	LL	Inspect Weekly, Sensor Daily, Alarm Monthly
9	P-181	TK-112 Rcv Pump	Cent. w/DS & BF	LL	Inspect Weekly, Sensor Daily, Alarm Monthly
10	P-184	TK-112 Rcv Pump	Cent. w/DS & BF	LL	Inspect Weekly, Sensor Daily, Alarm Monthly

0011-0020 Reserved for Future Use

Tank Manifolds

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
20	P-160A	Rcv Pump	Dbl Diaphragm	LL	No Detectable Emissions, Monitor Annually
21	P-160B	Rcv Pump	Cent. w/ DS & BF	LL	Inspect Weekly, Sensor Daily, Alarm Monthly
22	P-163A	Recirc Pump	Dbl Diaphragm	LL	No Detectable Emissions, Monitor Annually
23	P-163B	Recirc Pump	Cent. w/ DS & BF	LL	Inspect Weekly, Sensor Daily, Alarm Monthly
24	P-173A	Booster Pump	Cent. w/ DS & BF	LL	Inspect Weekly, Sensor Daily, Alarm Monthly
25	P-173B	Grinder Pump	Closed Loop Seal	LL	Inspect Weekly, Sensor Daily, Alarm Monthly

0025 - 0050 Reserved for Future Use

VALVES

Tank 103

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
0051	V-401	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
52	V-402	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
53	V-403	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
54	V-404	Inlet	Check Valve	LL	Inspect Weekly, Monitor Monthly
55	V-405	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
56	V-406	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
57	V-407	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
58	V-408	Flame Arrester		GV	Inspect and Monitor Every 6 Months
59	V-409	Conservation Vent		GV	Inspect and Monitor Every 6 Months
60	V-410	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
61	V-411	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
62	V-412	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
63	V-413	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
64	V-414	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
65	V-415	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
66	V-416	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
67	V-417	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak

Tank 104

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
68	V-418	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
69	V-419	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
70	V-420	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
71	V-421	Inlet	Check Valve	LL	Inspect Weekly, Monitor Monthly
72	V-422	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
73	V-423	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
74	V-424	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
75	V-425	Flame Arrester		GV	Inspect and Monitor Every 6 Months
76	V-426	Conservation Vent		GV	Inspect and Monitor Every 6 Months
77	V-427	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
78	V-428	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
79	V-429	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
80	V-430	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
81	V-431	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
82	V-432	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
83	V-433	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
84	V-434	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak

Tank 105

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
85	V-435	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
86	V-436	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
87	V-437	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
88	V-438	Inlet	Check Valve	LL	Inspect Weekly, Monitor Monthly
89	V-439	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
90	V-440	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
91	V-441	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
92	V-442	Flame Arrester		GV	Inspect and Monitor Every 6 Months
93	V-443	Conservation Vent		GV	Inspect and Monitor Every 6 Months
94	V-444	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
95	V-445	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
96	V-446	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
97	V-447	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
98	V-448	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
99	V-449	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
100	V-450	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
101	V-451	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak

Tank 106

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
102	V-452	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
103	V-453	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
104	V-454	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
105	V-455	Inlet	Check Valve	LL	Inspect Weekly, Monitor Monthly
106	V-456	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
107	V-457	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
108	V-458	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
109	V-459	Flame Arrester		GV	Inspect and Monitor Every 6 Months
110	V-460	Conservation Vent		GV	Inspect and Monitor Every 6 Months
111	V-461	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
112	V-462	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only

113	V-463	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
114	V-464	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
115	V-465	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
116	V-466	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
117	V-467	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
118	V-468	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak

Tank 109

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
119	V-469	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
120	V-470	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
121	V-471	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
122	V-472	Inlet	Check Valve	LL	Inspect Weekly, Monitor Monthly
123	V-473	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
124	V-474	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
125	V-475	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
126	V-476	Flame Arrester		GV	Inspect and Monitor Every 6 Months
127	V-477	Conservation Vent		GV	Inspect and Monitor Every 6 Months
128	V-478	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
129	V-479	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
130	V-480	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
131	V-481	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
132	V-482	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
133	V-483	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
134	V-484	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
135	V-485	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak

Tank Drain Manifold

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
	Tank 103				
136	V-486	Recycle to Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
137	V-487	Pump Off to Truck	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
138	V-488	Blend Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
139	V-489	Tank Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
140	V-490	Drain Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
	Tank 104				
141	V-491	Recycle to Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
142	V-492	Pump Off to Truck	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
143	V-493	Blend Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
144	V-494	Tank Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
145	V-495	Drain Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
	Tank 105				
146	V-496	Recycle to Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
147	V-497	Pump Off to Truck	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
148	V-498	Blend Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
149	V-499	Tank Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
150	V-500	Drain Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
	Tank 106				
151	V-501	Recycle to Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
152	V-502	Pump Off to Truck	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
153	V-503	Blend Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
154	V-504	Tank Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
155	V-505	Drain Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
	Tank 109				
156	V-506	Recycle to Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
157	V-507	Pump Off to Truck	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly

158	V-508	Blend Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
159	V-509	Tank Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
160	V-510	Drain Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
161	V-511	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
162	V-512	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
163	V-513	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
	Tank 103				
164	V-514	Blend Return	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
165	V-515	Drum Consolidation	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
166	V-516	Truck to Tank Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
167	V-517	Alternate Fill	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
168	V-518	Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
	Tank 104				
169	V-519	Blend Return	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
170	V-520	Drum Consolidation	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
171	V-521	Truck to Tank Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
172	V-522	Alternate Fill	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
173	V-523	Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
	Tank 105				
174	V-524	Blend Return	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
175	V-525	Drum Consolidation	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
176	V-526	Truck to Tank Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
177	V-527	Alternate Fill	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
178	V-528	Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
	Tank 106				
179	V-529	Blend Return	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
180	V-530	Drum Consolidation	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
181	V-531	Truck to Tank Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
182	V-532	Alternate Fill	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
183	V-533	Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
	Tank 109				
184	V-534	Blend Return	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
185	V-535	Drum Consolidation	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
186	V-536	Truck to Tank Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
187	V-537	Alternate Fill	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
188	V-538	Line Bleed	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
189	V-539	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
190	V-540	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
191	V-541	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
192	V-542	Check Valve		LL	No Detectable Emissions, Monitor Annually
193	V-543	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
194	V-544	Air Actuated Valve		LL	Inspect Weekly, Monitor Monthly
195	V-545	Check Valve		LL	No Detectable Emissions, Monitor Annually
	From Truck/Rail Car				
196	V-546	ST-174 Inlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
197	V-547	ST-174 Outlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
198	V-548		Check Valve	LL	No Detectable Emissions, Monitor Annually
199	V-549		Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
200	V-550	Aux Input	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
201	V-551	Pump 160B Inlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
202	V-552	Pump 160A Inlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
203	V-553	Air Supply Line	Manual Ball Valve	N/A	Not Required
204	V-554	Air Supply Regulator	Solenoid Valve	N/A	Not Required
205	V-555	Pressure Relief		LL	No Detectable Emissions, Monitor Annually
206	V-556	Pump 160B Outlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly

207	V-557	Pump 160A Outlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
208	V-558	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
		Rail Car & Truck Fill			
209	V-559	Pump 173B Inlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
210	V-560	Pump 173B Outlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
211	V-561	Pump 173A Inlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
212	V-562	Pump 173A Outlet	MBV w/Indicator	LL	Inspect Weekly, Monitor Monthly
213	V-563	Pump 173B Bypass	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
214	V-564	Pump 173A Bypass	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
215	V-565	Car & Truck Fill	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
216	V-566	Return to Tank	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
217	V-567	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
		Fuels Blending Feed			
218	V-568	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
219	V-569	Pump 163B Inlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
220	V-570	Pump 163A Inlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
221	V-571	Air Supply Line	Manual Ball Valve	N/A	Not Required
222	V-572	Air Supply Regulator	Solenoid Valve	N/A	Not Required
223	V-573	Pressure Relief		LL	Inspect Weekly, Monitor Monthly
224	V-574	Pump 163A Outlet	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
225	V-575	Pump 163B Outlet	MBV w/ Indicator	LL	Open Ended Valve, Cover with Cap
226	V-576	Rupture Disk		LL	Inspect Weekly, Monitor Monthly

Tank 101

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
227	V-577	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
228	V-578	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
229	V-579	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
230	V-580	Inlet	Check Valve	LL	Inspect Weekly, Monitor Monthly
231	V-581	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
232	V-582	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
233	V-583	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
234	V-584	Flame Arrester		GV	Inspect and Monitor Every 6 Months
235	V-585	Conservation Vent		GV	Inspect and Monitor Every 6 Months
236	V-586	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
237	V-587	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
238	V-588	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
239	V-589	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
240	V-590	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
241	V-591	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
242	V-592	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
243	V-593	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak

Tank 107

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
244	V-594	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
245	V-595	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
246	V-596	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
247	V-597	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
248	V-598	Inlet	Check Valve	LL	No Detectable Emissions, Monitor Annually
249	V-599	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
250	V-600	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
251	V-601	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
252	V-602	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
253	V-603	Flame Arrester		GV	Inspect and Monitor Every 6 Months

254	V-604	Conservation Vent		GV	Inspect and Monitor Every 6 Months
255	V-605	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
256	V-606	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
257	V-607	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
258	V-608	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
259	V-609	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
260	V-610	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
261	V-611	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
262	V-612	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak

TK-101 & TK-107 Pump Pad

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
263	V-613	TK-101 Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
264	V-614	Drain Bleed Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
265	V-615	TK-107 Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
266	V-616	Drain Bleed Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
267	V-617	TK-107 Recycle Valve	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
268	V-618	TK-101 Recycle Valve	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
269	V-619	ST-179 Inlet Valve	MBV w/ Indicator	LL	Inspect Weekly, Monitor Monthly
270	V-620	ST-179 Outlet Valve	MBV w/Indicator	LL	Inspect Weekly, Monitor Monthly
271	V-621	Check Valve		LL	Inspect Weekly, Monitor Monthly
272	V-622	Pump 178 Inlet Valve	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
273	V-623	Pump 176 Inlet	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
274	V-624	Pump 178 Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
275	V-625	Pump 176 Outlet	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
276	V-626	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
277	V-627	Return to Truck	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
278	V-628	TK-101 Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
279	V-629	TK-107 Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
280	V-630	Air Supply Line	Manual Ball Valve	N/A	Not Required
281	V-631	Air Supply Regulator	Solenoid Valve	N/A	Not Required

Tank 112

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
282	V-632	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
283	V-633	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
284	V-634	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
285	V-635	Inlet	Check Valve	LL	Inspect Weekly, Monitor Monthly
286	V-636	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
287	V-637	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
288	V-638	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
289	V-639	Flame Arrester		GV	Inspect and Monitor Every 6 Months
290	V-640	Conservation Vent		GV	Inspect and Monitor Every 6 Months
291	V-641	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
292	V-642	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
293	V-643	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
294	V-644	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
295	V-645	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
296	V-646	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
297	V-647	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
298	V-648	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
299	V-649	TK-112 Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
300	V-650	Drain Bleed Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap

TK-112 Pump Pad

301	V-651	TK-112 Recycle Valve	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
302	V-652	ST-175 Inlet Valve	MBV w/ Indicator	LL	Open Ended Valve, Cover with Cap

303	V-653	ST-175 Outlet Valve	MBV w/Indicator	LL	Inspect Weekly, Monitor Monthly
304	V-654	Check Valve		LL	No Detectable Emissions, Monitor Annually
305	V-655	Pump 176 Inlet Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
306	V-656	Pump 162 Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
307	V-657	Pump 162 Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
308	V-658	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
309	V-659	Pump 176 Outlet	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
310	V-660	Return to Truck	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
311	V-661	TK-112 Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
312	V-662	Air Supply Line	Manual Ball Valve	N/A	Not Required
313	V-663	Air Supply Regulator	Solenoid Valve	N/A	Not Required

Tank 102

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
314	V-664	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
315	V-665	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
316	V-666	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
317	V-667	Inlet	Check Valve	LL	No Detectable Emissions, Monitor Annually
318	V-668	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
319	V-669	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
320	V-670	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
321	V-671	Flame Arrester		GV	Inspect and Monitor Every 6 Months
322	V-672	Conservation Vent		GV	Inspect and Monitor Every 6 Months
323	V-673	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
324	V-674	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
325	V-675	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
326	V-676	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
327	V-677	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
328	V-678	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
329	V-679	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
330	V-680	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
331	V-681	TK-102 Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
332	V-682	Drain Bleed Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
		TK-102 Pump Pad			
333	V-683	TK-102 Recycle Valve	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
334	V-684	ST-182 Inlet Valve	MBV w/ Indicator	LL	Open Ended Valve, Cover with Cap
335	V-685	ST-182 Outlet Valve	MBV w/Indicator	LL	Inspect Weekly, Monitor Monthly
336	V-686	Check Valve		LL	No Detectable Emissions, Monitor Annually
337	V-687	Pump 176 Inlet Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
338	V-688	Pump 181 Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
339	V-689	Pump 181 Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
340	V-690	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
341	V-691	Pump 176 Outlet	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
342	V-692	Return to Truck	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
343	V-693	TK-102 Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
344	V-694	Air Supply Line	Manual Ball Valve	N/A	Not Required
345	V-695	Air Supply Regulator	Solenoid Valve	N/A	Not Required

Tank 110

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
346	V-696	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
347	V-697	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
348	V-698	Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
349	V-699	Inlet	Check Valve	LL	No Detectable Emissions, Monitor Annually
350	V-700	Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
351	V-701	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap

352	V-702	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
353	V-703	Flame Arrester		GV	Inspect and Monitor Every 6 Months
354	V-704	Conservation Vent		GV	Inspect and Monitor Every 6 Months
355	V-705	Emergency Vent		GV	No Detectable Emissions, Monitor Annually
356	V-706	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
357	V-707	N2 Inlet	Air Actuated Valve	N/A	Exempt, In Nitrogen Service Only
358	V-708	N2 Inlet	Self Pressure Reg Valve	N/A	Exempt, In Nitrogen Service Only
359	V-709	N2 Inlet	Manual Ball Valve	N/A	Exempt, In Nitrogen Service Only
360	V-710	Drain Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
361	V-711	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
362	V-712	Rupture Disk		LL	Inspect Weekly, Monitor if Evidence of Leak
363	V-713	TK-110 Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
364	V-714	Drair Bleed Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap

TK-110 Pump Pad

365	V-715	TK-110 Recycle Valve	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
366	V-716	ST-185 Inlet Valve	MBV w/ Indicator	LL	Open Ended Valve, Cover with Cap
367	V-717	ST-185 Outlet Valve	MBV w/Indicator	LL	Inspect Weekly, Monitor Monthly
368	V-718	Check Valve		LL	No Detectable Emissions, Monitor Annually
369	V-719	Pump 176 Inlet Valve	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
370	V-720	Pump 184 Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
371	V-721	Pump 184 Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
372	V-722	Sample Port	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
373	V-723	Pump 176 Outlet	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
374	V-724	Return to Truck	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
375	V-725	TK-110 Feed	Air Actuated Valve	LL	Inspect Weekly, Monitor Monthly
376	V-726	Air Supply Line	Manual Ball Valve	N/A	Not Required
377	V-727	Air Supply Regulator	Solenoid Valve	N/A	Not Required

Mist Eliminator and Dual Carbon Bed Scrubber

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
378	V-728	From Rail Cars	Manual Ball Valve	GV	Open Ended Valve, Cover with Cap
379	V-729	Flame Arrester		GV	Inspect Weekly, Monitor if Evidence of Leak
380	V-730	From Rail Cars	Manual Ball Valve	GV	Open Ended Valve, Cover with Cap
381	V-731	Flame Arrester		GV	Inspect Weekly, Monitor if Evidence of Leak
382	V-732	From Rail Cars	Manual Ball Valve	GV	Open Ended Valve, Cover with Cap
383	V-733	Flame Arrester		GV	Inspect Weekly, Monitor if Evidence of Leak
384	V-734	From Rail Cars	Manual Ball Valve	GV	Open Ended Valve, Cover with Cap
385	V-735	Flame Arrester		GV	Inspect Weekly, Monitor if Evidence of Leak
386	V-736	Check Valve		GV	No Detectable Emissions, Monitor Annually
387	V-737	Check Valve		GV	No Detectable Emissions, Monitor Annually
388	V-738	Mist Elim Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap
389	V-739	Mist Elim Drain	Manual Ball Valve	LL	Open Ended Valve, Cover with Cap

Fuels Blending System

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
390	V-740	Disp Tank Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
391	V-741	Disp Tank Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
392	V-742	Ovfl Tank Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
393	V-743	Disp Tank Solids Out	Knife Valve	LL	Inspect Weekly, Monitor Monthly
394	V-744	Disp Tank Recycle	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
395	V-745	Disp Prcs Valve	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
396	V-746	Disp Prcs Valve	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
397	V-747	Pump 167 Inlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly
398	V-748	Check Valve		LL	No Detectable Emissions, Monitor Annually
399	V-749	Pump 167 Outlet	Manual Ball Valve	LL	Inspect Weekly, Monitor Monthly

0400-0500 Reserved for Future Use

FLANGES

Fuels Blending System

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
0501-0600	Reserved for Flanges, Fuels Blending System			LL	Inspect Weekly, Monitor if Evidence of Leak

Tank Farm & Tank Manifold

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
0601-1000	Reserved for Flanges, Tank Farm & Manifold			LL	Inspect Weekly, Monitor if Evidence of Leak

OPEN ENDED LINES

Fuels Blending System

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
1001-1025	Reserved for Open Ended Lines, Blending System			LL	Close with Cap

Tank Farm & Tank Manifold

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
1026	OEL-1	TK-101 & 107 Discharge Line		LL	Close with Cap
1027	OEL-2	TK-102 Discharge Line		LL	Close with Cap
1028	OEL-3	TK-110 Discharge Line		LL	Close with Cap
1029	OEL-4	TK-112 Discharge Line		LL	Close with Cap
1030-1050	Reserved for Open Ended Lines, Tank Farm and Manifold				

OTHER EQUIPMENT

Fuels Blending System

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
1051-1075	Reserved for Other Regualted Equipment, Fuels Blending				

Tank Farm & Tank Manifold

Tag No.	Equip. ID	Designation	Type of Equipment	Svc	Method of Compliance
1076	ST-174	Trnsfr Pump Strainer		LL	Inspect Weekly, Monitor if Evidence of Leak
1077	ST-175	Trnsfr Pump Strainer		LL	Inspect Weekly, Monitor if Evidence of Leak
1078	ST-179	Trnsfr Pump Strainer		LL	Inspect Weekly, Monitor if Evidence of Leak
1079	ST-182	Trnsfr Pump Strainer		LL	Inspect Weekly, Monitor if Evidence of Leak
1080	ST-185	Trnsfr Pump Strainer		LL	Inspect Weekly, Monitor if Evidence of Leak

1081 - 1150 Reserved for Future Use

Key to Equipment Identification

MBV: Manual Ball Valve
DS: Dual Mechanical Seal
BF: Barrier Seal Fluid

Key to Type of Service

GV: Gas Vapor
LL: Light Liquid

See drawings in Appendix H for approximate locations within the facility
All Hazardous Waste Streams are assumed to be greater than 10% organics by weight.
The Hazardous Waste State at each piece of equipment is indicated by the type of service.
All liquid service is assumed to be Light Liquid.

Appendix B

Subpart CC Regulated Equipment and Processes

Appendix B

List of Subpart CC Regulated Equipment
Clean Harbors Services, Inc.

The following items items are subject to subject to Subpart CC:

Tank Farm

Tank 101	12,800 gallons
Tank 102	12,800 gallons
Tank 103	12,800 gallons
Tank 104	12,800 gallons
Tank 105	12,800 gallons
Tank 106	12,800 gallons
Tank 107	12,800 gallons
Tank 109	12,800 gallons
Tank 110	12,800 gallons
Tank 112	19,600 gallons

Fuels Blending

Tank 161-21	1,225 gallons (dispersion tank)
Tank 161-22	275 gallons (overflow tank)

Closed Vent/Control Devices

Granular activated carbon systems and ancillary equipment associated with Tank Farm and Fuel Blending systems.

Containers
The facility manages various containers (e.g., drums, rolloffs, totes, lab packs, bulk transporters, rail cars, etc.) which are subject to Subpart CC requirements.

Revision Date: December 6, 1996

Appendix C

Leak Detection Monitoring

Appendix C

Leak Detection Method

The method specified for emission monitoring procedures is Method 21 which is referenced in 40 CFR Part 60 Appendix A. Method 21 applies to the determination of VOC leaks from process equipment. These sources include valves, flanges and other connections, pumps, pressure relief devices, process drains, and access door seals.

Implementation of Leak Detection Method

The leak detection methods shall be implemented by the use of a Photovac MicroFID portable Flame Ionization Detector (FID) operated in Method 21 Compliance Mode. The MicroFID utilizes a computer program called Star 21 to track compliance inspection schedules and requirements. The schedules, monitoring locations and requirements are uploaded into the MicroFID in preparation for monitoring. Once loaded, the instrument guides the operator through the inspection process by requesting each required background reading and source reading in a programmed sequence. The pertinent data is logged into the instrument and then downloaded to computer. The computer database maintains the required monitoring data for each tagged and identified source.

This information is printed out periodically and added to the facility operating record. In addition, the database is backed up monthly onto a floppy disk which is stored separately to guard against data loss.

An excerpt of the MicroFID user manual which discusses the use of the Star 21 software in compliance mode is attached to this appendix.

Leak Detection Using Ambient Concentration

Ambient concentration shall be determined for any measurement where the compliance standard is 500 ppmv. This would be the case when monitoring equipment designated as "No Detectable Emission" service, containers, tanks, pressure relief devices, compressors, or closed vent systems. Please refer to Tables 3.1 and 6.2 for the specific equipment and monitoring requirements for each facility.

To determine local ambient conditions at each source moving the probe inlet randomly upwind and downwind at a distance of one to two meters from the source. If an interference exists due to nearby equipment or leaks from other sources, the local ambient concentration may be determined at distances closer to the source. Measurements closer than 25 centimeters (approximately 10 inches) are not allowed.

To determine if the equipment is leaking, move the probe inlet to the surface of the source and determine the concentration. If the

difference between the ambient concentration and the source concentration is less than 500 ppm, there are no detectable emissions and the source is NOT LEAKING. The MicroFID will record this data for downloading to the computer database.

Leak Detection Where Ambient Concentration is not Required

This method shall be used to determine if a leak is occurring above the threshold level for equipment with a leak determination threshold of 10,000 ppmv. This would include valves, pumps, flanges and other connections. Refer to tables 3.1 and 6.2 for the specific equipment monitoring requirements.

Place the probe inlet at the surface of the equipment where leakage could occur. This would be a joint, a shaft penetration, or a seal. Move the probe along the joint, penetration or seal while observing the instrument read-out. If an increased meter reading is observed, slowly sample the point where leakage is indicated until the maximum meter reading is obtained. Leave the probe inlet at this maximum reading location for approximately 6 seconds (twice the MicroFID published response time). Divide the instrument reading by the response factor as determined in Section V to get the actual leak concentration. The Micro FID can store calibration factors for various compounds as well. If a ca;ibration is stored, retrieve it from instrument memory before making the required measurement so that the instrument will measure accurately. If the corrected instrument reading is equal to or greater than 10,000 ppm, the equipment is LEAKING and the leak identification and repair procedures of section 5.5 should be followed.

Examples of Monitoring Procedures

Examples of the application of this general technique to specific equipment types are:

1) Valves

The most common source of leaks from valves is at the seal between the stem and housing. Place the probe at the interface where the stem exits the packing gland and sample all of the way around the stem. Next, place the probe at the interface of the packing gland take-up flange seat and sample completely around the fitting. Finally, sample any joints or connections in multipart housing assemblies where leaks could occur.

2) Flanges and Other Connections

Place the probe at the outer surface of the interface and sample entirely around flange and connections.

3) Pumps

Move the probe tip completely around the outer surface of the pump shaft and seal interface. If the source is a rotating shaft, position the probe inlet within one centimeter of the shaft-seal interface for the survey. If the housing configuration blocks access to part of the shaft, sample all accessible portions. Sample all other joints on the pump or compressor housing where leakage could occur.

4) Pressure Relief Devices

The configuration of most pressure relief devices prevents sampling at the sealing seat interface. For those devices equipped with an enclosed extension, or horn, place the probe inlet at approximately the center of the exhaust area to the atmosphere.

5) Process Drains

For open drains, place the probe inlet at approximately the center of the area open to the atmosphere. For covered drains, place the probe at the cover joint and sample all of the way around the joint.

6) Open-Ended Lines or Valves

Place the probe inlet at approximately the center of the opening to the atmosphere.

Instrument Calibration and Evaluation Procedures

A) Daily Calibration

1) The instrument shall be calibrated before each day of its use.

2) The calibration gases to be used are:
   a) Zero air (less than 10 ppm of hydrocarbon in air).
   b) A mixture of methane or n-hexane and air at a concentration of approximately, but less than, 10,000 ppm methane or n-hexane.
   c) Cylinder calibration gas mixtures (must be analyzed and certified by the manufacturer to be within + or - 2% accuracy, and a shelf life must be specified).

3) Perform the instrument evaluation procedures - Response Factor, Calibration Precision Test and Response Time - if they have not yet been conducted as required.

4) Assemble and start up the VOC analyzer. After the initial warm-up period and zero internal calibration procedure, introduce the calibration gas into the instrument sample probe. Adjust the meter read-out to correspond to the calibration gas value.

Note: If the meter read-out cannot be adjusted to the proper value, a malfunction of the analyzer is indicated and corrective actions are necessary.

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B) Response Factor

The MicroFID response factors are published by the manufacturer for many compounds. The list is attached in Appendix F and is available in the MicroFID users manual. These published response factors will substitute for this test.

C) Calibration Precision Test

The calibration precision test must be completed prior to placing the analyzer into service, and at subsequent 3-month intervals or at the next use whichever is later.

1) Make a total of three measurements by alternately using zero gas and the calibration gas.

2) Record the meter readings.

3) Calculate the average algebraic difference between the meter readings and the known value.

4) Divide this average difference by the known calibration value and multiply by 100 to express the resulting calibration precision as a percentage.

D) Response Time

The Response time for the MicroFID is stated by the manufacturer to be 3 seconds to 90% of full scale. This Response time may be referenced. No additional determination is required.

Appendix D

Calibration Information

APPENDIX D

CALIBRATION RESPONSE INFORMATION

Response Factors

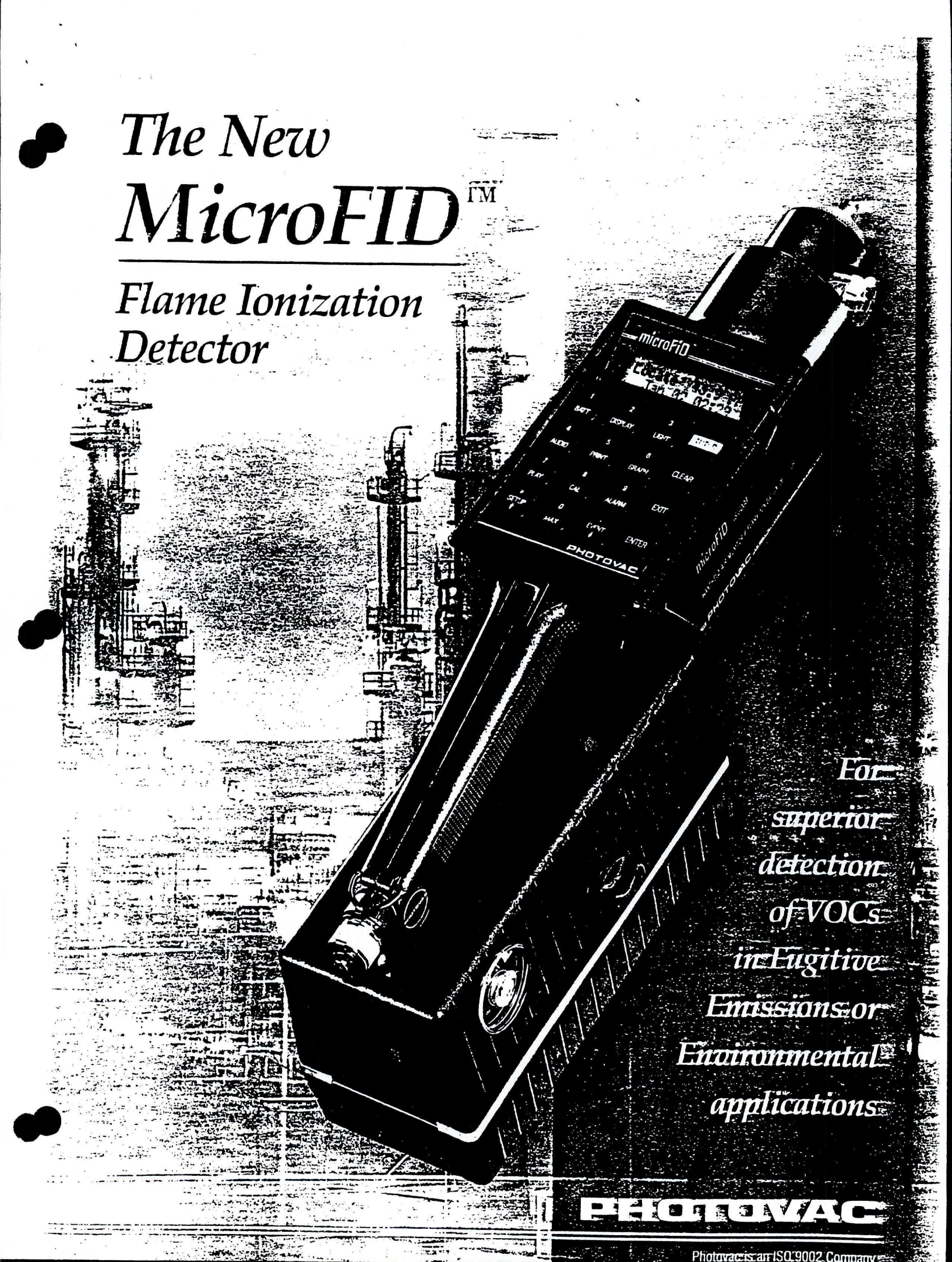
See Attached Table of Response Factors for the Photovac MicroFID Flame Ionization Detector.

Response Time

Less than 3 seconds to 90% Full Scale. Please refer to the attached vendor's information for additional details.

The New MicroFID™

Flame Ionization Detector



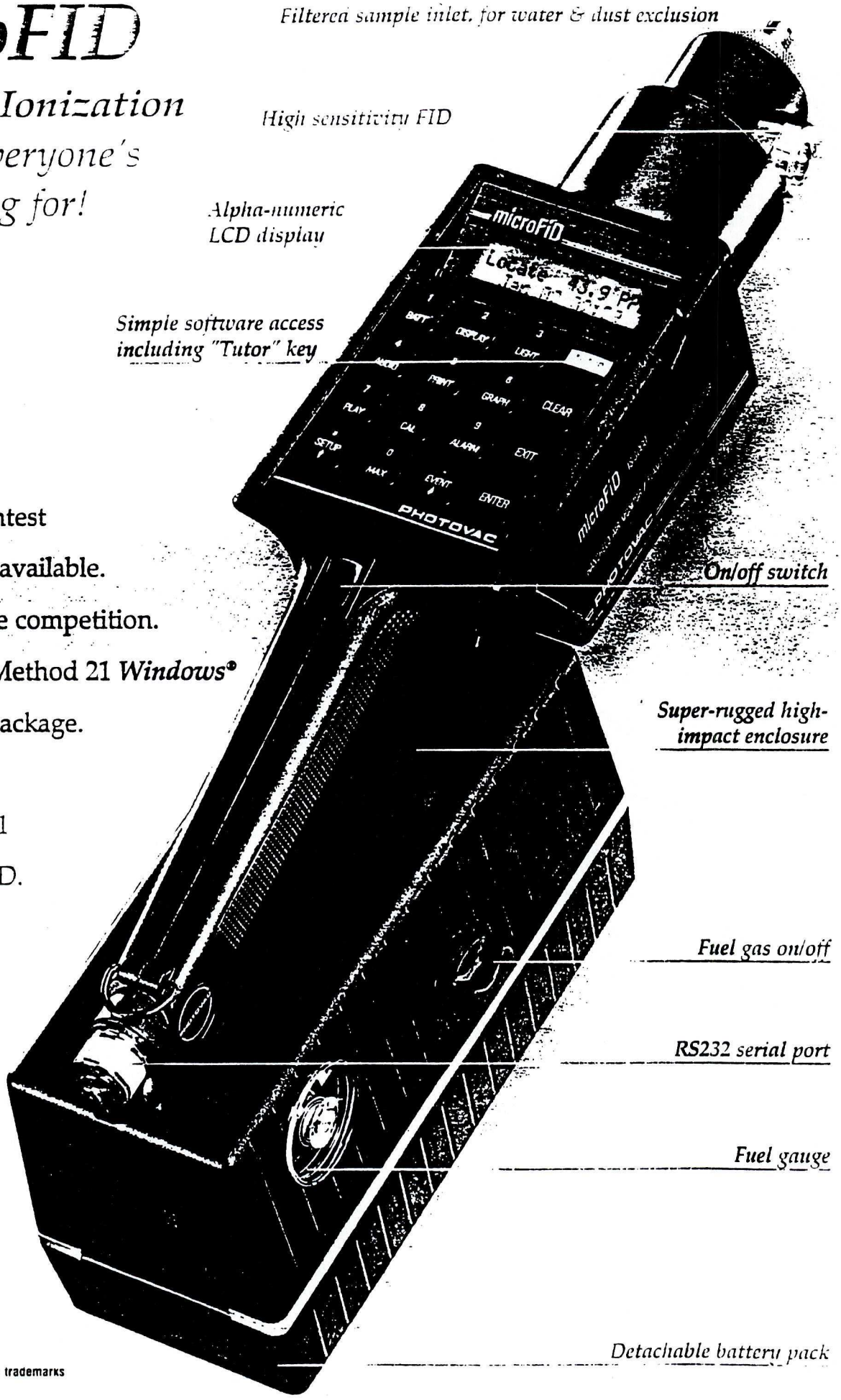
For superior detection of VOCs in Fugitive Emissions or Environmental applications

PHOTOVAC

Photovac is an ISO 9002 Company

MicroFID

The Flame Ionization Detector everyone's been waiting for!



- The smallest, lightest datalogging FID available.
- Out-performs the competition.
- Integrated EPA Method 21 *Windows*® based software package.
- Intrinsically Safe Class I, Division 1 Groups A,B,C & D.

Overview

MicroFID is the world's lightest FID with built-in datalogging. Photovac's powerful STAR 21 data management software allows start-to-finish compliance with EPA Method 21 Fugitive Emissions Monitoring (LDAR) to be as easy as possible.

Linked to a PC, MicroFID becomes the only available instrument AND comprehensive Windows based software package for *scheduling, measurement, datalogging and reporting.*

MicroFID incorporates design and performance qualities, based on Photovac's ever-popular and field-proven MicroTIP PID.

MicroFID allows trouble-free measurement of soil gases in those cases where the response-factor consistency of an FID is mandatory or where Methane must be included in the total reading. MicroFID comes with a built-in water/dust filter to guard against expensive accidents.

STAR 21 Software

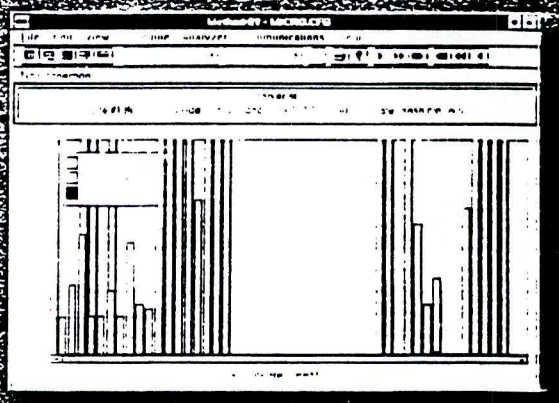
- Developed specifically for Leak Detection & Repair (LDAR) monitoring by EPA Method 21, to meet all the specifications described in Federal Regulations for Fugitive Emissions.
- Allows complex monitoring schedules to be uploaded into multiple MicroFIDs, guiding the operator through a day's work.
- Background, Sample and Difference readings are logged for each sampling point.
- Compliance reports, with graphing, are generated; including Leakers, Percent Leaker Calculation and MACT tracking.

Easy to Use in the Field

- Small and lightweight for single-handed or shoulder strap/probe operation.
- Easy-to-learn, the "Tutor" key prompts the user through basic operation.
- Replaceable and rechargeable battery packs operate for a comfortable 15 hours.

STAR 21™ Software

MicroFID used with an IBM-compatible PC is a powerful combination for field monitoring and data management.



The STAR 21 Windows interface provides simple data storage, review and reporting.

The range of accessories includes a bar-code reader, extension probe, spare battery packs and a simple, computer-assisted calibration system.

MicroFID offers the convenience of being used either as a "hand-held" tool as in the above illustration or, using an extension probe, of being comfortably carried over the shoulder for longer field tasks.

MicroFID Specifications

Size
43.5 cm (17.1") long, 9.8 cm (3.85") wide, 18.8 cm (7.4") high

Weight
3.7 Kg (8.1 lb)

Keypad
16-key silicone with tactile feedback

Display
2-line, 16 character LCD with alphanumeric and bar graph readouts

Analog output
0 to 1 Volt full scale

Serial output
RS-232

Audio output
Continuous concentration modulated tone

Battery capacity
15 Hrs (snap-on replacement)

Hydrogen cylinder discharge time
Greater than 12 hours

Operating concentration range
0.1 to 50,000 Methane equivalent (two ranges)

Accuracy
Methane (after calibration with zero air and 100 PPM Methane span gas): within ±0.5 PPM or ±10% of actual Methane concentration 0.1 to 2,000 PPM range.

Response time
Less than 3 sec. (to 90% FS)

Detection Limit
0.5 PPM Methane

Intrinsic Safety
Class I, Division 1, Groups A,B,C & D.

Specifications subject to change without notice.

For a MicroFID demonstration, please contact your nearest Photovac Representative:

USA
PHOTOVAC MONITORING INSTRUMENTS
25-B Jefryn Boulevard West, Deer Park, NY 11729
Tel: (516) 254-4199 • **Fax:** (516) 254-4284

Canada/International
PHOTOVAC INCORPORATED
330 Cochrane Drive, Markham, Ontario L3R 8E5
Tel: (905) 477-8088 • Fax: (905) 477-8220
Telex: (USA) 7608242 • Telex Answerback: PHOTO

Represented by:
ICS ASSOCIATES, INC.
508 [illegible]

PHOTOVAC

ICS Associates, Inc.
319 Littleton Road, Ste. 104
Westford, MA 01886
Phone 508-692-3545
FAX 508-692-0227

FAX!
COVER PAGE

TO: Clean Harbors, Inc.	ATT: Chris Dunn
FROM: Shelly Dubey	CC:
DATE: May 19, 1995	ICSA REF.#
NO. of PAGES (INCLUDING THIS PAGE): 5	
SUBJECT: MicroFID Response Factors	

MESSAGE:

Hi Chris:

Per our conversation, please find the enclosed on the MicroFID Response Factors.

If you have any questions or need additional information, please feel free to call.

Have a great weekend!

Shelly

3. Gas bag adapter to fit gas bag and MicroFID inlet.

The kit does not include a tank of span gas. The recommended span gas is methane in air. The exact concentration will be determined by your application. If you order you calibration gas from Scott Specialty Gases Inc., specify a Scotty V Cylinder.

Span gas may be obtained from:

Scott Specialty Gases Inc.
1290 Combermere Street
Troy, Michigan 48083

Telephone (within the USA): 1-800-774-9447
Telephone (outside USA): 1-810-589-2950
Fax: 810-589-2134

8.5 Response Factors

This list of response factors was determined at (nominally) 500 ppm, based on a 500 ppm methane calibration gas. Methane will have a response factor of 1.0. The following formula was used for calculation of the response factors:

$$\text{Response Factor} = \frac{\text{Actual Concentration}}{\text{MicroFID Response}}$$

A response factor less than 1.0 indicates a compound response better than that of methane. A response factor greater than 1.0 indicates a lower response than that of methane.

When using response factors, results are expected to be accurate to +/- 10 ppm or +/- 25%, whichever is greater.

Compound	Response Factor
Acetaldehyde	6.9[C]
Acetone	2.7[C]
Acetonitrile (Methyl Cyanide)	1.0[C]
Acrolein (2-Propenal)	6.9[C]
Acrylonitrile (Vinyl Cyanide)	1.3[C]
Allyl Chloride (3-Chloro-1-Propene)	2.7[C]
Aniline (Benzenamine)	3.0[C]
Benzene	0.7[C]
Benzyl Chloride (Chloromethyl Benzene)	1.2[C]
Bromoform (Tribromomethane)	7.2[C]

Table 12 MicroFID Response Factors

Compound	Response Factor
1,3-Butadiene	2.7[C]
iso-Butane	1.8[C]
n-Butane	1.9[C]
n-Butanol	2.6[C]
n-Butyl Mercaptan (Butanethiol)	2.6[C]
Carbon Tetrachloride	25.9[C]
Chlorobenzene	0.8[C]
Chloroform (Trichloromethane)	3.5[C]
Cumene (Isopropyl Benzene)	1.0[C]
Cyclohexane	1.4[C]
1,2-Dichlorobenzene (ortho-)	0.7[C]
cis-1,2-Dichloroethylene	2.6[C]
trans-1,2-Dichloroethylene	2.7[C]
N,N-Dimethylformamide (DMF)	2.3[C]
1,4-Dioxane	4.6[C]
Epichlorohydrin	2.4[C]
Ethane	1.9[C]
Ethanol	5.2[C]
Ethyl Acrylate	2.7[C]
Ethylbenzene	1.0[C]
Ethyl Cellosolve (2-Ethoxyethanol)	4.3[C]
Ethyl Chloride (Chloroethane)	1.9[C]
Ethyl Mercaptan (Ethanethiol)	3.7[C]
Ethylene	2.2[C]
Ethylene Dibromide(1,2-Dibromoethane)	2.0[C]
Ethylene Dichloride(1,2-Dichloroethane)	1.7[C]
n-Heptane	1.3[C]
n-Hexane	1.6[C]

Table 12 MicroFID Response Factors - continued

Compound	Response Factor
Isobutylene	2.2[C]
Isoprene (2-Methyl-1,3-Butadiene)	2.2[C]
Isopropanol	2.4[C]
Methanol	23.8[C]
Methyl Bromide (Bromomethane)	3.9[C]
Methyl Ethyl Ketone (2-Butanone)	1.9[C]
Methyl Isobutyl Ketone	1.9[C]
Methyl Methacrylate	2.8[C]
Methyl tert-Butyl Ether (MTBE)	2.0[C]
Methyl Cellosolve (2-Methoxyethanol)	9.1[C]
Methylene Chloride (Dichloromethane)	1.4[C]
n-Nonane	1.1[C]
iso-Octane (2,2,4-Trimethylpentane)	1.2[C]
n-Pentane	1.6[C]
Propane	1.8[C]
Propionaldehyde (Propanal)	3.6[C]
Propylene	2.6[C]
Propylene Dichloride (1,2-DCP)	2.0[C]
Propylene Oxide	2.5[C]
Styrene	1.2[C]
1,1,2,2-Tetrachloroethane	1.8[C]
Tetrachloroethylene (Perchloroethylene)	2.9[C]
Toluene	0.9[C]
1,1,1-Trichloroethane	1.4[C]
1,1,2-Trichloroethane	1.7[C]
Trichloroethylene (TCE)	2.8[C]

Table 12 *MicroFID Response Factors - continued*

Compound	Response Factor
Triethylamine	1.1[L]
Vinyl Acetate	4.4[L]
Vinyl Bromide	1.5[L]
Vinyl Chloride (Chloroethylene)	2.1[L]
Vinylidene Chloride (1,1-DCE)	2.6[L]
ortho-Xylene	1.1[L]
meta-Xylene	1.2[L]
para-Xylene	1.2[L]

Table 12 MicroFID Response Factors - continued

Standards used for determination of these response factors were derived from a variety of sources:

C - Certified gas cylinder, +/- 2% analytical accuracy (Isobutylene +/- 5% analytical accuracy)

G - From standard prepared by dilution of neat gas into zero Air, accuracy unknown

L - From standard prepared by addition of neat liquid to zero Air, accuracy unknown

8.6 References

1. Maslansky, Carol J. and Steven P. Maslansky. *Air Monitoring Instrumentation*. New York: Van Nostrand Reinhold, 1993

2. Scott Specialty Gases, Catalog, 1994

PHOTOVAC

Technical Bulletin #1

COMPOUNDS DETECTABLE WITH THE MICROTIP, MICROFID, AND 10S SERIES OF PORTABLE GAS CHROMATOGRAPHS

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Photovac Monitoring Instruments
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Photovac Incorporated
330 Cochrane Drive
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COMPOUNDS DETECTABLE WITH PHOTOVAC PID, FID AND PORTABLE GAS CHROMATOGRAPHS

COMPOUND	IONIZATION POTENTIAL(eV)	ANALYZER GC	MTP	FID
Acetaldehyde	10.21	√	√	√
Acetic Acid	10.37		√	√
Acetone	9.69	√	√	√
Acetonitrile	12.2	√		√
Acetylene*	11.41	√	√	√
Acetylene Dichloride	9.80	√		√
Acetylene Tetrabromide	n.p.		√	√
Acrolein	10.10	√	√	√
Acrylonitrile	10.91	√	√	√
Allene	9.83	√	√	√
Allyl Alcohol	9.67	√	√	√
Allyl Chloride	10.20	√	√	√
Aminoethanol	9.87	√	√	√
2-Amino Pyridine	8.34		√	√
Ammonia	10.15	√	√	
n-Amyl Acetate	n.p.	√	√	√
sec-Amyl Acetate	n.p.	√	√	√
Aniline	7.70		√	√
Arsine	9.89	√	√	
Benzaldehyde	9.53	√	√	√
Benzene	9.25	√	√	√
Benzenethiol	8.33	√	√	√
Benzyl Chloride	9.14	√	√	√
Bromobenzene	8.98	√	√	√
1-Bromobutane	10.13	√	√	√
2-Bromobutane	9.98	√	√	√
1-Bromobutanone	9.54	√	√	√
1-Bromo-2-chloroethane	10.63	√	√	√
Bromochloromethane	10.77	√		√
Bromodichloromethane	10.59	√	√	√
1-Bromo-3-chloropropane	n.p.	√	√	√
Bromoethane	10.28	√	√	√
Bromoethene	9.80	√	√	√
Bromoform	10.48	√	√	√
1-Bromo-3-hexanone	9.26	√	√	√
Bromomethane	10.53	√	√	√
Bromomethyl Ethyl Ether	10.08	√	√	√
1-Bromo-2-methylpropane	10.09	√	√	√
2-Bromo-2-methylpropane	9.89	√	√	√
1-Bromopentane	10.10	√	√	√
1-Bromopropane	10.18	√	√	√
2-Bromopropane	10.08	√	√	√
1-Bromopropene	9.30	√	√	√
2-Bromopropene	10.06	√	√	√
3-Bromopropene	9.70	√	√	√
2-Bromothiophene	8.63	√	√	√

COMPOUND	IONIZATION POTENTIAL(eV)	ANAL GC	MT
o-Bromotoluene	8.79	√	√
m-Bromotoluene	8.81	√	√
p-Bromotoluene	8.67	√	√
1,3-Butadiene	9.07	√	√
2,3-Butadione	9.23	√	√
n-Butanal	9.83	√	√
2-Butanal	9.73	√	√
n-Butane	10.63	√	√
2-Butanone	9.53	√	√
iso-Butanol	10.47	√	√
sec-Butanol	10.23	√	√
tert-Butanol	10.25	√	√
1-Butene	9.58	√	√
cis-2-Butene	9.13	√	√
trans-2-Butene	9.13	√	√
n-Butyl Acetate	10.01	√	√
sec-Butyl Acetate	9.91	√	√
t-Butyl Acetate	9.90	√	√
n-Butyl Alcohol	10.04	√	√
n-Butylamine	8.71		√
i-Butylamine	8.70		√
s-Butylamine	8.70		√
t-Butylamine	8.64		√
n-Butylbenzene	8.69	√	√
i-Butylbenzene	8.68	√	√
t-Butylbenzene	8.68	√	√
Butyl Cellosolve®	8.68	√	√
i-Butyl Ethanoate	9.95	√	√
n-Butyl Mercaptan	9.15	√	√
t-Butyl Mercaptan	9.03	√	√
iso-Butyl Mercaptan	9.12	√	√
i-Butyl Methanoate	10.46	√	√
p-tert-Butyltoluene	8.35	√	√
1-Butyne	10.18	√	√
2-Butyne	9.85	√	√
n-Butyraldehyde	9.86	√	√
Carbon Disulfide	10.13	√	√
CarbonTetrachloride*	11.28	√	√
Cellosolve Acetate	n.p.	√	√
Chloracetaldehyde	10.16	√	√
Chlorobenzene	9.07	√	√
Chlorobromomethane	10.77	√	
1-Chloro-2-bromoethane	10.63	√	√
1-Chlorobutane	10.67	√	√
2-Chlorobutane	10.65	√	√
1-Chlorobutanone	9.54	√	√

COMPOUND	IONIZATION POTENTIAL(eV)	ANALYZER GC	MTIP	FID
1-Chloro-2,3-epoxypropane	10.60	√	√	√
Chloroethane(Ethyl Chloride)	10.97	√		√
Chloroethene	10.00	√	√	√
2-Chloroethoxyethene	10.61	√	√	√
1-Chloro-2-fluorobenzene	9.16	√	√	√
1-Chloro-3-fluorobenzene	9.21	√	√	√
cis-1-Chloro-2-fluoroethene	9.87	√	√	√
trans-1-Chloro-2-fluoroethene	9.87	√	√	√
Chloroform*	11.37	√	√	√
o-Chloroiodobenzene	8.35	√	√	√
Chloromethylethyl Ether	10.08	√	√	√
Chloromethylmethyl Ether	10.25	√	√	√
1 Chloro-2-methylpropane	10.66	√	√	√
Chloroprene	8.83	√	√	√
1-Chloropropane*	10.82	√	√	√
2-Chloropropane*	10.78	√	√	√
3-Chloropropene	10.04	√	√	√
p-Chlorostyrene	n.p.	√	√	√
2-Chlorothiophene	8.68	√	√	√
o-Chlorotoluene	8.83	√	√	√
m-Chlorotoluene	8.83	√	√	√
p-Chlorotoluene	8.70	√	√	√
o-Cresol	8.48		√	√
m-Cresol	8.48		√	√
p-Cresol	8.48		√	√
Cumene (i-Propyl Benzene)	8.75	√	√	√
Crotonaldehyde	9.73	√	√	√
Cyanoethene*	10.91	√	√	√
Cyanogen Bromide*	10.91	√	√	
3-Cyanopropene	10.39	√	√	√
Cyclobutane	10.50	√	√	√
Cyclohexane	9.98	√	√	√
Cyclohexanol	10.00	√	√	√
Cyclohexanone	9.14	√	√	√
Cyclohexene	8.95	√	√	√
Cyclo-octatetraene	7.99	√	√	√
Cyclopentadiene	8.55	√	√	√
Cyclopentane	10.52	√	√	√
Cyclopentanone	9.26	√	√	√
Cyclopentene	9.01	√	√	√
Cyclopropane	10.06	√	√	√
2-Decanone	9.40	√	√	√
Diacetone Alcohol	n.p.		√	√
1,3-Dibromobutane	n.p.	√	√	√
1,4-Dibromobutane	n.p.	√	√	√
Dibromochloromethane	10.59	√	√	√
Dibromochloropropane	n.p.	√	√	√
1,1-Dibromoethane	10.19	√	√	√
Dibromomethane	10.49	√	√	√
1,2-Dibromopropane	10.26	√	√	√

COMPOUND	IONIZATION POTENTIAL(eV)	ANALY GC	MTI
2,2-Dibromopropane	n.p.	√	√
Dibutylamine	7.69		√
1,2-Dichlorobenzene	9.07	√	√
1,3-Dichlorobutane*	n.p.	√	√
1,4-Dichlorobutane*	n.p.	√	√
cis-1,4-Dichloro-2-butene	n.p.	√	√
2,2-Dichlorobutane*	n.p.	√	√
2,3-Dichlorobutane*	n.p.	√	√
3,4-Dichlorobutene	n.p.	√	√
1,1-Dichloroethane*	11.06	√	√
1,2-Dichloroethane*	11.04	√	√
cis-Dichloroethene	9.65	√	√
trans-Dichloroethene	9.66	√	√
1,1-Dichloroethene	10.00	√	√
Dichloroethyl Ether	n.p.	√	√
Dichloromethane*	11.35	√	√
1,2-Dichloropropane*	10.87	√	√
1,3-Dichloropropane*	10.85	√	√
1,1-Dichloropropanone	9.71	√	√
2,3-Dichloropropene	9.82	√	√
Dicyclopentadiene	7.74	√	√
Diethoxymethane	9.70	√	√
Diethylamine	8.01		√
Diethylaminoethanol	8.58		√
Diethyl Ether	9.53	√	√
Diethyl Ketone	9.32	√	√
Diethyl Sulfide	8.43	√	√
1,2-Difluorobenzene	9.31	√	√
1,4-Difluorobenzene	9.15	√	√
Difluorodibromomethane*	11.18	√	
Difluoromethylbenzene	9.45	√	√
Diiodomethane	9.34	√	√
Diisobutyl Ketone	9.04	√	√
Diisopropylamine	7.73		√
1,1-Dimethoxyethane	9.65	√	√
Dimethoxymethane	10.00	√	√
Dimethylamine	8.24		√
Dimethylaniline	7.13		√
2,3-Dimethylbutadiene	8.72	√	√
2,2-Dimethylbutane	10.06	√	√
2,2-Dimethylbutan-3-one	9.18	√	√
2,3-Dimethylbutane	10.02	√	√
2,3-Dimethyl-2-butene	8.30	√	√
3,3-Dimethylbutanone	9.17	√	√
Dimethyl Disulfide	8.46	√	√
Dimethyl Ether	10.00	√	√
Diethylformamide	9.45		√
3,5-Dimethyl-4-heptanone	9.04	√	√
1,1-Dimethylhydrazine	8.88		√
2,2-Dimethyl-3-pentanone	8.98	√	√

COMPOUND	IONIZATION POTENTIAL(eV)	ANALYZER GC	MTIP	FID
2,2-Dimethylpropane	10.35	√	√	√
Dimethyl Sulfide	8.69	√	√	√
Di-n-propyl Disulfide	8.27	√	√	√
Di-n-propyl Ether	9.27	√	√	√
Di-i-propyl Ether	9.20	√	√	√
Di-n-propylamine	7.84		√	√
Di-n-propyl Sulfide	8.30	√	√	√
1,4-Dioxane	9.41	√		√
Epichlorohydrin	10.60	√	√	√
Ethane*	11.65	√	√	√
Ethanol	10.62	√	√	√
Ethanolamine	9.87		√	√
Ethanethiol (Ethyl Mercaptan)	9.29	√	√	√
Ethene (Ethylene)	10.52	√	√	√
Ethyl Acetate	10.11	√	√	√
Ethyl Acrylate	n.p.	√	√	√
Ethylamine	8.86		√	√
Ethyl Amyl Ketone	9.10	√	√	√
Ethylbenzene	8.76	√	√	√
Ethyl Bromide	10.29	√	√	√
Ethyl Butyl Ketone	9.02	√	√	√
Ethyl Chloride	11.01	√		√
Ethyl Chloroacetate	10.20	√	√	√
Ethyl Ethanoate	10.10	√	√	√
Ethyl Ether	9.41	√	√	√
Ethyl Disulfide	8.27	√	√	√
Ethylene Chlorohydrin	10.90	√	√	√
Ethylene Dibromide (EDB)	10.37	√	√	√
Ethylene Oxide	10.56	√	√	√
Ethyl Formate	10.61	√	√	√
Ethyl Iodide	9.33	√	√	√
Ethyl Mercaptan	9.29	√	√	√
Ethyl Methanoate	10.61	√	√	√
Ethyl Isothiocyanate	9.14	√	√	√
Ethyl Methyl Sulfide	8.55	√	√	√
Ethyl Propanoate	10.00	√	√	√
Ethyl Trichloroacetate	10.44	√	√	√
mono-Fluorobenzene	9.20	√	√	√
mono-Fluoroethene	10.37	√	√	√
mono-Fluoromethanal	11.40	√	√	√
Fluorotribromomethane	10.67	√	√	√
o-Fluorotoluene	8.92	√	√	√
m-Fluorotoluene	8.92	√	√	√
p-Fluorotoluene	8.79	√	√	√
Formaldehyde	10.88	√		
Freon 11 (Fluorotrichloromethane)	11.77	√		√
Freon 12 (Dichlorodifluoromethane)	12.91	√		√
Freon 13 (Chlorotrifluoromethane)	12.91	√		√
Freon 13 B-1 (Bromotrifluoro-methane)	12.08	√		√

COMPOUND	IONIZATION POTENTIAL(eV)	ANALY: GC	MTIP
Freon 14 (Carbon Tetrafluoride)	16.25	√	
Freon 21 (Dichlorofluoromethane)	12.00	√	
Freon 22 (Chlorodifluoromethane)	12.45	√	
Freon 113 (1,2-Dichlorotrifluoro-ethane)	11.78	√	
Furan	8.89	√	√
Furfuryl Alcohol	n.p.	√	√
Furfural	9.21	√	√
n-Heptane	10.07	√	√
2-Heptanone	9.33	√	√
4-Heptanone	9.12	√	√
n-Hexane	10.18	√	√
Hexanone	n.p.	√	√
2-Hexanone	9.44	√	√
1-Hexene	9.46	√	√
sec-Hexyl Acetate	n.p.		√
Hydrazine	n.p.	√	√
Hydrogen Selenide	9.88	√	√
Hydrogen Sulfide	10.46	√	√
Hydrogen Telluride	9.14	√	√
Iodobenzene	8.73	√	√
1-Iodobutane	9.21	√	√
2-Iodobutane	9.09	√	√
Iodoethane (Ethyl Iodide)	9.33	√	√
Iodomethane (Methyl Iodide)	9.54	√	√
1-Iodo-2-methylpropane	9.18	√	√
1-Iodo-2-methylpropane	9.02	√	√
1-Iodopentane	9.19	√	√
1-Iodopropane	9.26	√	√
2-Iodopropane	9.17	√	√
o-Iodotoluene	8.62		√
m-Iodotoluene	8.61		√
p-Iodotoluene	8.50		√
Isoamyl Acetate	9.90	√	√
Isoamyl Alcohol	10.16	√	√
Isobutane	10.57	√	√
Isobutylamine	8.70		√
Isobutyl Acetate	9.97	√	√
Isobutyl Alcohol	10.47	√	√
Isobutyl Formate	10.46	√	√
Isobutylene	9.43	√	√
Isobutyraldehyde	9.74	√	√
Isopentane	10.32	√	√
Isoprene	8.85	√	√
Isopropyl Acetate	9.99	√	√
Isopropyl Alcohol	10.16	√	√
Isopropylamine	8.72		√
Isopropylbenzene	8.75	√	√
Isopropyl Ether	9.20	√	√
Isovaleraldehyde	9.71	√	√

COMPOUND	IONIZATION POTENTIAL(eV)	ANALYZER GC	MTIP	FID
Ketene	9.61	√	√	√
Mesitylene	8.40	√	√	√
Mesityl Oxide	9.08	√	√	√
Methane	12.98	√		√
Methanol *	10.85	√		√
Methyl Acetate	10.27	√	√	√
Methyl Acrylate	10.72	√		√
Methylamine	8.97		√	√
Methyl Bromide	10.53	√	√	√
2-Methyl-1,3-butadiene	8.85	√	√	√
2-Methylbutanal	9.71	√	√	√
2-Methylbutane	10.31	√	√	√
2-Methyl-1-butene	9.12	√	√	√
3-Methyl-1-butene	9.51	√	√	√
3-Methyl-2-butene	8.67	√	√	√
Methyl tert-Butyl Ether	9.41	√	√	√
Methyl n-Butyl Ketone	9.34	√	√	√
Methyl Butyrate	10.07	√	√	√
Methyl Cellosolve	n.p.	√	√	√
Methyl Cellosolve Acetate	n.p.	√	√	√
[redacted]thyl Chloroacetate	10.35	√	√	√
[redacted]thylchloroform *	11.25	√	√	√
Methylcyclohexane	9.85	√	√	√
Methylcyclohexanol	9.80	√	√	√
Methylcyclohexanone	9.05	√	√	√
4-Methylcyclohexene	8.91	√	√	√
Methylcyclopropane	9.52	√	√	√
Methyl Dichloroacetate	10.44	√	√	√
Methyl Ethanoate	10.27	√	√	√
Methyl Ethyl Ketone (MEK)	9.53	√	√	√
Methyl Ethyl Sulfide	8.55	√	√	√
2-Methyl Furan	8.39	√	√	√
Methyl Iodide	9.54	√	√	√
Methyl Isobutyl Ketone (MIBK)	9.30	√	√	√
Methyl Isobutyrate	9.98	√	√	√
Methyl Isocyanate	10.67	√		√
1-Methyl-4-isopropylbenzene	n.p.	√	√	√
Methyl Isopropyl Ketone	9.32	√	√	√
Methyl Mercaptan	9.44	√	√	√
Methyl Methacrylate	9.74	√	√	√
Methyl Methanoate	10.82	√		√
2-Methylpentane	10.12	√	√	√
3-Methylpentane	10.08	√	√	√
2-Methylpropane	10.56	√	√	√
2-Methylpropanal	9.74	√	√	√
[redacted]ethyl-2-propanol	9.70	√	√	√
2-Methylpropene	9.23	√	√	√
Methyl n-propyl Ketone	9.39	√	√	√
Methyl Styrene	8.35	√	√	√
Monomethyl Hydrazine	8.00	√	√	√

COMPOUND	IONIZATION POTENTIAL(eV)	ANALYZER GC	MTIP	FID
Naphthalene	8.10	√	√	
Nitric Oxide	9.25	√	√	
Nitrobenzene	9.92		√	
p-Nitrochlorobenzene	9.96		√	
n-Nonane	10.21	√	√	
5-Nonanone	9.10	√	√	
n-Octane	10.24	√	√	
3-Octanone	9.19	√	√	
4-Octanone	9.10	√	√	
1-Octene	9.52	√	√	
n-Pentane	10.53	√	√	
cis-1,3-Pentadiene	8.59	√	√	
trans-1,3-Pentadiene	8.56	√	√	
n-Pentanal	9.82	√	√	
2,4-Pentanedione	8.87	√	√	
2-Pentanone	9.39	√	√	
3-Pentanone	9.32	√	√	
1-Pentene	9.50	√	√	
Perfluoro-2-butene*	11.25	√		
Perfluoro-1-heptene	10.48	√	√	
n-Perfluoropropyl Iodide	10.36		√	
n-Perfluoropropyl-iodomethane	9.96	√	√	
n-Perfluoropropyl-methyl Ketone	10.58	√	√	
Phenol	8.69		√	
Phenyl Ether	8.09	√	√	
Phenyl Isocyanate	8.77	√	√	
Phosphine	9.96	√	√	
Pinene	8.07	√	√	
Propadiene	10.19	√	√	
n-Propanal	9.95	√	√	
Propane *	11.07	√	√	
1-Propanethiol	9.20	√	√	
n-Propanol	10.51	√	√	
Propanone	9.69	√	√	
Propene	9.73	√	√	
Prop-1-ene-2-ol	8.20	√	√	
Prop-2-ene-1-ol	9.67	√	√	
Propionaldehyde	9.98	√	√	
n-Propyl Acetate	10.04	√	√	
n-Propyl Alcohol	10.20	√	√	
n-Propylamine	8.78		√	
n-Propylbenzene	8.72	√	√	
Propylene	9.73	√	√	
Propylene Dichloride	10.87	√	√	
Propylene Imine	8.76	√	√	
Propylene Oxide	10.22	√	√	
n-Propyl Ether	9.27	√	√	
n-Propyl Formate	10.54	√	√	
Propyne	10.36	√	√	
Pyridine	9.32		√	

COMPOUND	IONIZATION POTENTIAL(eV)	ANALYZER GC	MTIP	FID
Styrene	8.47	√	√	√
Tetrabromoethane	n.p.	√	√	√
Tetrachloroethylene (PCE)	9.32	√	√	√
1,1,1,2-Tetrachloroethane	n.p.	√	√	√
1,1,2,2-Tetrachloroethane	11.1	√	√	√
Tetrafluoroethene	10.12	√	√	√
Tetrahydrofuran	9.54	√	√	√
1,1,1,2-Tetrachloropropane	n.p.	√	√	√
1,2,2,3-Tetrachloropropane	n.p.	√	√	√
Thioethanol	9.29	√	√	√
Thiomethanol	9.44	√	√	√
Thiophene	8.86	√	√	√
1-Thiopropanol	9.20	√	√	√
Toluene	8.82	√	√	√
o-Toluidine	7.44	√	√	√
Tribromoethene	9.27	√	√	√
1,1,1-Trichlorobutanone	9.54	√	√	√
1,1,1-Trichloroethane *	11.25	√	√	√
1,1,2-Trichloroethane	11.0	√	√	√
Trichloroethylene (TCE)	9.45	√	√	√
[illegible]hloromethyl Ethyl Ether	10.08	√	√	√
[illegible],2-Trichloropropane	n.p.	√	√	√
1,2,3-Trichloropropane	n.p.	√	√	√
Triethylamine	7.50		√	√
1,2,4-Trifluorobenzene	9.37	√	√	√
1,3,5-Trifluorobenzene	9.32	√	√	√
Trifluoroethene	10.14	√	√	√
1,1,1-Trifluoro-2-iodoethane	10.10	√	√	√
Trifluoroiodomethane	10.40	√	√	√
Trifluoromethylbenzene	9.68	√	√	√
Trifluoromethylcyclohexane	10.46	√	√	√
1,1,1-Trifluoropropene	10.90	√	√	√
Trimethylamine	7.82		√	√
2,2,4-Trimethyl Pentane	9.86	√	√	√
2,2,4-Trimethyl-3-pentanone	8.82	√	√	√
n-Valeraldehyde	9.82	√	√	√
Vinyl Acetate	9.19	√	√	√
Vinyl Bromide	9.80	√	√	√
Vinyl Chloride	10.00	√	√	√
4-Vinylcyclohexene	8.93	√	√	√
Vinyl Ethanoate	9.19	√	√	√
Vinyl Fluoride	10.37	√	√	√
Vinylidene Chloride (1,1-DCE)	10.0	√	√	√
Vinyl Methyl Ether	8.93	√	√	√
[illegible]Vinyl Toluene	8.20		√	√
[illegible]ylene	8.56	√	√	√
m-Xylene	8.56	√	√	√
p-Xylene	8.45	√	√	√
2,4-Xylidine	7.65		√	√

* The sensivitity of the TIP, MicroTIP, and GC to these compound may be enhanced using a 11.7 eV lamp instead of the standard 10.6 eV lamp energy.

n.p. - Not published

GC = 10S+, 10S70, 10S50, 10S30, 10S10, and 10A10
MTIP = TIP, TIPI, TIPII, MicroTIP MP-100, HL-200, MP-1000, HL-2000, IS-3000, and 2020

Many compounds not appearing in this list, with an ionization potential of 12.0 eV or less, may also be detectable.

For further information, please contact the Technical Services/ Applications Department at Photovac Monitoring Instruments

Appendix E

Outline of Minimum Facility Compliance Record

Appendix E
Outline of Minimum Facility Compliance Record
Subparts AA, BB and CC

Clean Harbors of Chicago, Inc.

The RCRA Air emissions standards contained in 40 CFR 264 require that certain records and documents be kept at the facility to demonstrate compliance with the regulatory requirements. This appendix presents in outline form the detailed record keeping requirements for the Clean Harbors of Chicago, Inc. (CHCI) facility.

Subpart AA

The Record Keeping requirements of Subpart AA do not apply to the CHCI facility because there are no Subpart AA regulated processes at the facility.

Subpart BB

The records required under Subpart BB include the following:

1) Equipment specific identification information (264.1064(b))

2) Closed vent system and control device information (264.1064(e))

3) Information on equipment not subject to monthly Leak Detection and Repair (LDAR) (264.1064(g))

4) Marking of Leaking Equipment (264.1064(c))

5) Information on leaking equipment (264.1064(d))

6) Barrier Fluid Sensor Information (264.1064(j))

7) Information for Determining Exemptions (264.1064(k))

The Specific information required for and the applicability of each of these categories is presented below.

Equipment specific identification information (264.1064(b))

The following Equipment Identification information shall be recorded in the facility operating record for the life of the facility:

1) Equipment Identification Number and Hazardous Waste Unit Identification. This is contained in Appendix B.

2) Approximate Locations within the facility of the hazardous waste management unit. This is contained in Appendix I.

3) Type of Equipment. This is contained in Appendix B.

4) Percent by weight total organics in the hazardous waste stream at the equipment. This is contained in Appendix B.

5) Hazardous Waste State at the equipment. This is contained in Appendix B.

6) Method of Compliance with the Standard. This is contained in Appendix B.

7) An Implementation schedule for Closed Vent Emissions systems for Subpart AA regulated equipment. Does Not Apply.

8) A Performance Test plan for demonstration of the organic removal efficiency of a control device. Does not apply because testing is not being used to demonstrate performance of the emissions control device. In addition, the installed control systems are not used to control the emissions from any Subpart BB regulated equipment, thus this requirement does not apply.

9) Detailed design documentation for the emissions control systems. In this case, the installed control systems are not used to control the emissions from any Subpart BB regulated equipment, thus this requirement does not apply.

Closed vent system and control device information (264.1064(e))

The following Closed vent system and control device information shall be maintained in the facility operating record for a period of at least three years:

1) Design Documentation for each closed vent system used to comply with the requirements of Subpart BB. This would include Closed vent systems for the following equipment only:

   Pumps in Light Liquids Service (264.1052(f))
   Compressors (264.1053(h))
   Pressure Relief Devices in Gas/Vapor Service (264.1054(c))
   Sampling Connecting Systems (264.1055(b)(3))

The CHCI facility does not use Closed Vent systems to control emissions from any of the listed equipment, therefor this requirement does not apply.

Information on equipment not subject to monthly Leak Detection and Repair (LDAR) (264.1064(g))

Equipment designated as "No Detectable Emissions" service is not

subject to the monthly leak detection requirements. This would include the following equipment only:

Pumps in Light Liquid Service (264.1052(e))
Compressors (264.1053(i))
Valves in Gas/Vapor or Light Liquid Service (264.1057(f))

For each item from this list designated as "No Detectable Emissions" service, the facility operating record shall include the following information for the life of the facility:

1) A list of Identification numbers for the designated equipment. This is included in Appendix B.

2) A statement signed by the owner/operator designating the equipment as "No Detectable Emissions" service.

In addition, the facility operating record shall include the following for the life of the facility:

1) A list of each Pressure Relief Valve in Gas/Vapor Service (264.1054(a)). This is included in Appendix B.

2) The dates of each compliance test for the following equipment:

Pumps in Light Liquid Service (264.1052(e))
Compressors (264.1053(i))
Pressure Relief Devices in Gas/Vapor Service (264.1054)
Valves in Gas/Vapor or Light Liquid Service (264.1057(f))

This information is recorded by the STAR 21 software.

3) The Background level measured during each compliance test.

This information is record by the STAR 21 software.

4) The maximum instrument reading measured at each equipment during each compliance test.

This information is recorded by the STAR 21 software.

5) A list of identification numbers for equipment in vacuum service. No equipment has been designated as in vacuum service, therefor this requirement does not apply.

6) A list of all valves designated as "Unsafe to Monitor" (264.1057(g)) or as "Difficult to Monitor" (264.1057(h)). No valves have been given this designation, thus this requirement does not apply.

Marking of Leaking Equipment (264.1064(c))

Equipment which is discovered to be leaking shall be marked, and the operating record shall include specific information about the leak. This marking is temporary and is not required to be kept in the facility operating log. These requirements apply to the following equipment:

1) Pumps in Light Liquid Service (264.1052)
2) Compressors (264.1053)
3) Valves in Gas/Vapor or Light Liquid Service (264.1057)
4) Pumps and Valves in Heavy Liquid Service (264.1058)
5) Pressure Relief Devices in Light or Heavy Liquid Service (264.1058)
6) Flanges (264.1058)
7) Other Connectors (264.1058)

Each leak is to be identified with a weatherproof, readily visible tag attached to the leaking equipment with the following information written on the tag:

1) The equipment Identification number
2) The date evidence of a potential leak was discovered by sight, sound, smell or other means.
3) The date the leak was detected by the use of an instrument

This tag may be removed after the equipment is repaired except for a valve.

For valves, the tag shall remain on the repaired equipment until it has been monitored as leak free for 2 consecutive months. If a leak is discovered during the two month period, the repair and tagging process begins again for that valve.

Information on leaking equipment (264.1064(d))

In addition to the requirements to tag leaking equipment until it is repaired, Subpart BB also requires that certain information be kept in the facility operating records for a period of at least three years. This requirement applies only to:

1) Pumps in Light Liquid Service (264.1052)
2) Compressors (264.1053)
3) Valves in Gas/Vapor or Light Liquid Service (264.1057)
4) Pumps and Valves in Heavy Liquid Service (264.1058)
5) Pressure Relief Devices in Light or Heavy Liquid Service (264.1058)
6) Flanges (264.1058)
7) Other Connectors (264.1058)

The following information is to be kept in the facility operating log:

1) The name of the monitoring instrument operator and the identification numbers for the operator and the monitoring

equipment.

2) The date evidence of a potential leak was found by sight, sound, smell or other means.

3) The date the leak was detected or confirmed with an instrument.

4) The date of EACH attempt to repair the leak.

5) A notation of "Above 10,000" if the maximum instrument reading after each repair attempt is equal to or greater than 10,000 ppm.

6) A notation of "Repair Delayed" and an explanation of the reasons for the delay if the leak is not repaired within 15 calendar days of its discovery

7) Documentation supporting the reasons for the delay of repair (see section 5.5.2 of the Compliance Plan for further information)

8) The printed name and signature of the owner/operator who authorized or approved the delay of repair.

9) The expected date of successful repair if the repair is delayed beyond 15 calendar days from discovery.

10) The date on which the repair was successfully completed.

The leak detection and repair form provided in Appendix D provides room to record all of this required information. One of these log sheets shall be completed for each leak detected, and then entered into the facility operating record. This record is to be kept for at least three (3) years from the date of completion of the repair.

Barrier Fluid Sensor Information (264.1064(j))

The CHCI facility utilizes pumps which have Barrier fluid seals. The requirements to record documentation for this type of equipment are outlined in 264.1064(j). The required documentation includes the following:

The Design criteria listed in 264.1052(d)(5)(ii) and in 264.1053(e)(2). The requirements in 264.1053 apply to compressors only thus they are not applicable to the Chicago facility. The requirements in 264.1052(d)(5)(ii) include an explanation of the design rational for the determination of seal and or barrier fluid failure. In addition, the facility log is to include a written explanation of any changes to these criteria, and the reasons for the changes.

Information for Determining Exemptions (264.1064(k))

The CHCI facility does not claim exemptions for any of its RCRA permitted waste treatment activities, thus no records or waste determination are required to be kept for the purposes of compliance with this Subpart.

SUBPART CC

The record keeping requirements under Subpart CC are contained in 264.1089. The requirements and applicability of each section is discussed below.

Tanks

264.1089(a)(1) requires that documentation be kept for the life e of the facility for tanks with a floating roof. These include:

1) A fixed roof with an internal floating roof (264.1082(b)(2))
2) An external floating roof(264.1082(b)(3))

The CHCI facility does not operate any tanks of either type thus this requirement does not apply.

Surface Impoundments

264.1089(a)(2) requires that documentation be maintained for the life of the facility for covers installed on surface impoundments. The CHCI facility does not operate any surface impoundments, thus this requirement does not apply.

Closed Vent Systems and Control Devices

The closed vent systems and control devices installed at the CHCI facility for the removal of organic vapors include ducting, piping, and drums of Granular Activated Carbon. The used carbon is sent off site for regeneration or disposal at an appropriately permitted facility.

The requirements for documentation required for the Closed Vent System and the Control devices are outlined in 264.1089(a)(4). These include the following which shall be retained for the life of the facility:

1) A certification signed by the owner/operator that the control device is designed to provide a minimum control efficiency of 95% including disposal or regeneration of the spent carbon. This level of removal efficiency is to be certified at the highest operating level expected for the facility.

2) This certification is to be supported by a compliance test or by a design analysis. The performance certification can be provided by the manufacturer of the emissions control system. The design analysis shall meet the requirements of 264.1035(b)(4). The performance test shall meet the requirements of 264.1035(b)(3).

3) The Closed Vent System shall also be documented by design records and drawings which meet the standards of "ATPI Course 415: Control of Gaseous Emissions"

4) The description and date of each modification made to the enclosed vent system or control device.

5) The identification, location and hourly operating records of monitoring sensors used to verify the flow of vented gases to the control device from "Process Vents". None of the vents at the CHCI facility meet the definition of "Process Vent" contained in 264.1031, therefor, this requirement does not apply.

Containers

The records required for containers include the following which shall be kept for a minimum of three (3) years:

1) Records for all Method 27 Test performed on vehicles. These would normally be kept with the vehicle, and with the Clean Harbors Environmental Services, Inc. National Transportation Office in Braintree, Massachusetts.

Other Records Required

The record keeping requirements under Subpart CC also include the following items which shall be kept in the facility record for a minimum of three (3) years:

1) Record of all visual inspections performed on

Containers
Tanks
Tank covers
Closed vent systems
Control devices

This would be recorded on the inspection log sheet for the affected equipment.

2) Records of all monitoring performed on:

Containers

Tanks
Tank covers
Closed vent systems
Control devices

This would be recorded by the STAR 21 software and printed from the computer system each time monitoring is completed.

3) Records on the date for each leak repair attempt, repair methods applied, and date of successful repair. The Leak Inspection and repair form in Appendix D would be used to record this information.

4) Records of the management of the spent carbon from the carbon system. This would include certification of that the spent carbon is treated in one of the following ways:

a) Regenerated or Reactivated in a Subpart X permitted thermal treatment unit.

b) Incinerated in a Subpart O permitted facility.

c) Burned in a Subpart H permitted boiler or industrial furnace (BIF).

5) The operating record shall contain a listing of all covers and equipment designated as unsafe to inspect or monitor. The required information is included in appendix C. In addition, the facility operating record shall include:

1) An inspection schedule for each designated item.

These items are to be kept in the operating record for the life of the facility.

Waste Determination

The CHCI facility does not claim an exemption from Subpart CC for any of its RCRA regulated operations. No waste analysis information need be retained as part of the operating record for compliance with Subpart CC.

Appendix F

Inspection and Leak Repair Data Form

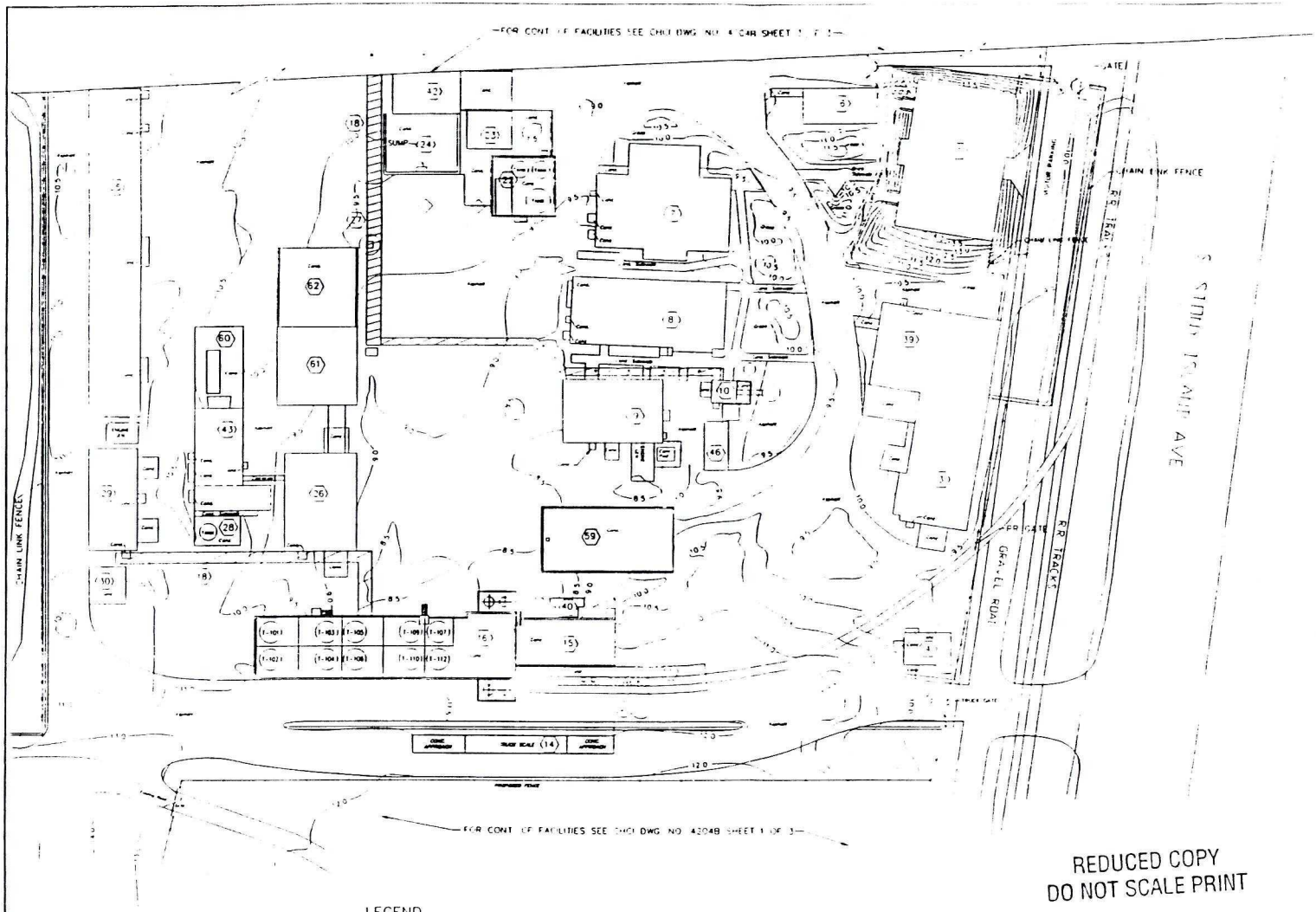
CLEAN HARBORS, INC.	FUGITIVE EMISSIONS DETECTION AND REPAIR LOG RCRA SUBPART BB	11800 SOUTH STONY ISLAND AVENUE CHICAGO, ILLINOIS

INSPECTOR:	DATE:	PLANT AREA:
DETECTION INSTRUMENT:		CALIBRATION DATE:
EQUIPMENT TAG NO:	VOC CONCENTRATION:	
EQUIPMENT LOCATION AND DESCRIPTION:	TYPE OF LEAK:	
	HAS LEAK IDENTIFIER TAG BEEN ATTACHED? YES / NO	
	CAN REPAIR BE COMPLETED WITHOUT UNIT SHUTDOWN? YES / NO	
	IF UNIT REQUIRES SHUTDOWN, STATE REASON: SIGNATURE: DATE:	
FIRST ATTEMPT AT REPAIR	EQUIPMENT RE-CHECK AFTER REPAIR	
DATE:	DATE	VOC CONCENTRATION
METHOD/DESCRIPTION:	_____	_____
	_____	_____
	_____	_____
ADDITIONAL ATTEMPTS AT REPAIR	ADDITIONAL ATTEMPTS AT REPAIR	
DATE:	DATE:	
METHOD/DESCRIPTION:	METHOD/DESCRIPTION:	
WORK ORDER NUMBER:	DATE OF SUCCESSFUL REPAIR:	

IF THERE WAS A DELAY, REASON FOR THE DELAY AND EXPECTED DATE OF REPAIR:	
MANAGER AUTHORIZING DELAY OF REPAIR: SIGNATURE:	DATE:
INSPECTOR'S SIGNATURE:	DATE:
COMMENTS:	

Appendix G

Facility Drawings



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LEGEND

1 OFFICE BUILDING
3 MAINTENANCE BUILDING
4 TRANSPORTATION/RECEIVING BUILDING
6 EAST PUMP HOUSE
7 PERSONNEL/TRAINING CENTER
8 LABORATORY BUILDING
9 CONTROL BUILDING
10 MWRDGC LIFT STATION
13 RAIL CAR UNLOADING AREA (SEE CHCI DWG. NO. 4217)
14 TRUCK SCALE
15 TRUCK UNLOADING PLATFORM (SEE CHCI DWG. NO. 4248)
16 FLAMMABLE STORAGE TANK FARM (SEE CHCI DWG. NO. 4215)
18 PIPE RACKS
22 NEUTRALIZING AREA
23 EFFLUENT TREATMENT BUILDING
24 LAMELLA SETTLERS
25 CONTAINER MANAGEMENT BUILDING (SEE CHCI DWG. NO. 4210 SHEET 3 OF 3)
26 IGNITABLE CONTAINER MANAGEMENT BUILDING (SEE CHCI DWG. NO. 4210 SHEET 2 OF 3)
27 STORM WATER LIFT STATION
28 NITROGEN STORAGE AREA
29 UTILITY BUILDING
30 FUEL OIL STORAGE
39 MAINTENANCE BUILDING ADDITION
40 DECONTAMINATION BUILDING
42 FILTER BUILDING
43 FUELS BLENDING OPERATION (APPROVED)(SEE CHCI DWG. NO. 4213 SHEET 2 OF 3)
46 FIRE EQUIPMENT BUILDING
59 TRUCK STAGING AREA (PROPOSED)(SEE CHCI DWG. NO. 4247)
60 ROLL-OFF PAD FOR FUELS BLENDING (APPROVED)(SEE CHCI DWG. NO. 4213 SHEET 2 OF 3)
61 CONTAINER HANDLING DOCK (PROPOSED)(SEE CHCI DWG. NO. 4245)
62 TRUCK PAD (PROPOSED)(SEE CHCI DWG. NO. 4246)

D	ADDED CONTOUR LINES AND GROUND SURFACE NOTATION. REVISED TITLE OF BUILDING 39				
C	REVISED FLAMMABLE STORAGE TANK FARM RELOCATED 59. TRUCK STAGING AREA (PROPOSED				

CHCI DWG. NO. 4204B

D	SEE REVISION NOTE D				
C	SEE REVISION NOTE C	MC	AM	EA	8/13/94
B	ISSUED FOR PERMIT				3/25/94
A	RCRA PART B MODIFICATION	MC	BH	PB	11/30/93

CleanHarbors
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CLEAN HARBORS OF CHICAGO, INC.
11800 S. STONY ISLAND AVENUE
CHICAGO, ILLINOIS 60617

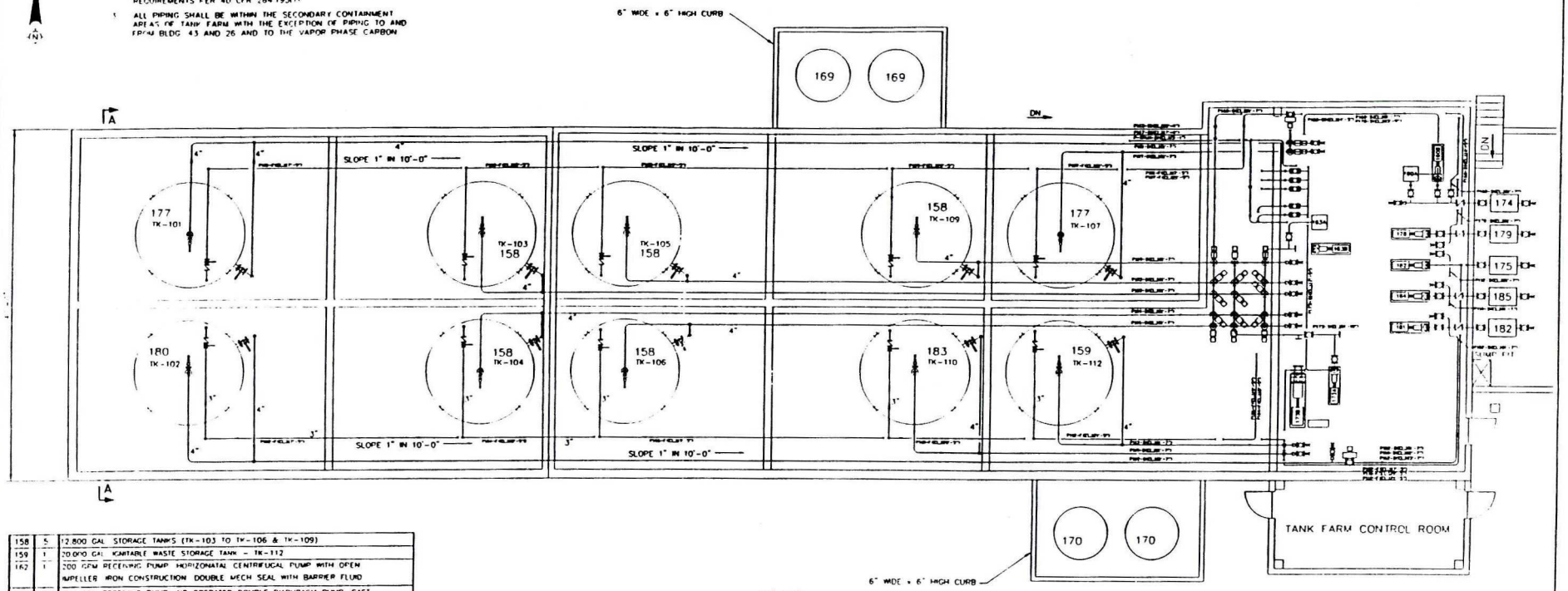
SITE PLAN – EXISTING, APPROVED, MODIFIED & PROPOSED ACTIVITIES
SHEET 2 OF 3

PROJECT NO. CW-5404
SCALE 1"=30'

2916-C-21

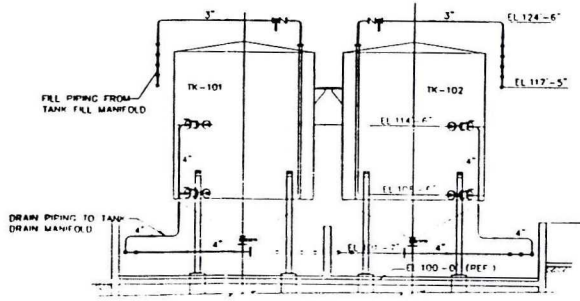
NOTES:

1. ALL PIPING SHALL BE DESIGNED AND INSTALLED PER ASME/ANSI B 31.3
2. ALL PIPING SYSTEM SHALL MEET SECONDARY CONTAINMENT REQUIREMENTS PER 40 CFR 264.193(f)
3. ALL PIPING SHALL BE WITHIN THE SECONDARY CONTAINMENT AREAS OF TANK FARM WITH THE EXCEPTION OF PIPING TO AND FROM BLDG 43 AND 26 AND TO THE VAPOR PHASE CARBON



PLAN

158	5	12,800 GAL STORAGE TANKS (TK-103 TO TK-106 & TK-109)
159	1	20,000 GAL IGNITABLE WASTE STORAGE TANK - TK-112
162	1	200 GPM RECEIVING PUMP HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER IRON CONSTRUCTION DOUBLE MECH SEAL WITH BARRIER FLUID
160A	1	200 GPM RECEIVING PUMP AIR OPERATED DOUBLE DIAPHRAGM PUMP CAST IRON HOUSING WITH VITON DIAPHRAGMS
160B	1	200 GPM RECEIVING PUMP HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER 316SS CONSTRUCTION DOUBLE MECH SEAL WITH BARRIER FLUID
161A	1	100 GPM RECIRCULATING/BLENDING SUPPLY PUMP AIR OPERATED DOUBLE DIAPHRAGM PUMP CAST IRON HOUSING WITH VITON DIAPHRAGMS
161B	1	100 GPM RECIRCULATING/BLENDING SUPPLY PUMP CENTRIFUGAL PUMP WITH OPEN IMPELLER DUCTILE IRON CONSTRUCTION DOUBLE MECH SEAL WITH BARRIER FLUID
169	1	DUAL CARBON BED SCRUBBER
170	1	DUAL CARBON BED SCRUBBER
173A	1	250 GPM BOOSTER PUMP HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER DUCTILE IRON CONSTRUCTION DOUBLE MECH SEAL WITH BARRIER FLUID
173B	1	250 GPM GRINDER PUMP MODEL 10-6 MEGAGRINDER WITH CLOSE LOOP SEAL COOLING SYSTEM AS MADE BY ARDE BARINCO INC. OR EQUIVALENT
174	1	STRAINER FOR TRANSFER PUMPS, ITEM #160A & 160B
175	1	STRAINER FOR TRANSFER PUMP ITEM #162
176	2	200 GPM PORTIABLE TRANSFER PUMP AIR OPERATED DOUBLE DIAPHRAGM PUMP CAST IRON HOUSING WITH VITON DIAPHRAGMS
177	5	12,800 GAL ACID/IGNITABLE WASTE STORAGE TANK (TK-101 & TK-107)
178	1	200 GPM RECEIVING PUMP HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER SS316 CONSTRUCTION DOUBLE MECH SEAL WITH BARRIER FLUID
179	1	STRAINER FOR TRANSFER PUMP ITEM #178
180	1	12,800 GAL PCB WASTE STORAGE TANK - TK-101
181	1	200 GPM RECEIVING PUMP HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER IRON CONSTRUCTION DOUBLE MECH SEAL WITH BARRIER FLUID
182	1	STRAINER FOR TRANSFER PUMP ITEM #181
183	1	12,800 GAL PCB WASTE STORAGE TANK - TK-110
184	1	200 GPM RECEIVING PUMP HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER IRON CONSTRUCTION DOUBLE MECH SEAL WITH BARRIER FLUID
185	1	STRAINER FOR TRANSFER PUMP ITEM #184
ITEM NO.	QTY.	DESCRIPTION



SECTION A-A

TYPICAL PIPING DETAIL FOR TANKS

REDUCED COPY
DO NOT SCALE PRINT

CHCI DWG. NO. 4252

REV #	REVISION NOTES	DRN	CHK	CHK	DATE
C	SEE REVISION NOTE C	RHP	RHP	RHP	1/1/08
B	SEE REVISION NOTE B	RHP	RHP	RHP	1/1/08
A	RCRA PART B MODIFICATION	RMS	AVL	AVL	8/8/97

REV #	REVISION NOTES
C	REVISED PIPING INFO, RELOCATED CARBON COLUMNS ON NORTH SIDE
B	REVISED EQUIPMENT LAYOUT AND ITEM DESCRIPTION
REV #	REVISION NOTES

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Telephone (617) 849-1700

CLEAN HARBORS OF CHICAGO, INC.
11800 S. St. Louis Avenue
Chicago, Illinois 60655

PIPING ARRANGEMENT
FLAMMABLE STORAGE TANK FARM

PROJECT NO. GW-5404
SCALE 3/16" = 1'-0"
DRAWING NO. 2916-P-01

ITEM NO.	QTY.	DESCRIPTION
158	5	12,800 GAL. STORAGE TANKS (TK-103 TO TK-106 & TK-109)
161	SET	FUELS BLENDING SYSTEM
164	SET	DRUM FEED CONVEYORS A, B(LIFTING), C AND D
165	1	DEBRIS CONVEYOR H
166	2	DRUM DISCHARGE CONVEYORS F AND G
167	1	150 GPM TRANSFER PUMP. AIR OPERATED DOUBLE DIAPHRAGM PUMP. CAST IRON HOUSING WITH VITON DIAPHRAGMS.
168	2	MIST ELIMINATION
169	1	DUAL CARBON BED SCRUBBER
170	1	DUAL CARBON BED SCRUBBER

TO ATMOSPHERE
8"DUCT
10"
169
8"DUCT
8"DUCT
8"C.S.
TO ATMOSPHERE
8"DUCT
10"
170
8"DUCT
8"DUCT
8"C.S.
8"C.S.
FROM NITROGEN GAS SUPPLY
2"C.S.
168
168
8"C.S.
8"C.S.
4"C.S.
4"C.S.
TO DEDICATED MIST ELIMINATOR AND DUAL CARBON BED SCRUBBER
NITROGEN PURGE
1"C.S.
FUELS BLENDING SYSTEM
161
UNLESS OTHERWISE NOTED ALL FUEL BLENDING EQUIPMENT WILL BE DESIGNATED WITH AN EQUIPMENT NUMBER PREFIX OF 161. FOR MORE INFORMATION SEE THE FOLLOWING CHCI DWG. NO.'S:
4213
4235
4236
4237
4238
4239
4240
4241
164
166
165
CRUSHED DRUM CONTAINER
167
FROM RECIRCULATING/ BLENDING SUPPLY PUMPS DWG. NO. 2916-F-07
TO TANK FILL MANIFOLD DWG. NO. 2916-F-07
FROM TANK FILL MANIFOLD DWG. NO. 2916-F-07
FROM RAIL CARS
2" HOSE
F.A.
FROM STRAINERS DWG. NO. 2916-F-07 DWG. NO. 2916-F-08
FROM TRUCKS
FROM STORAGE TANKS DWG. NO. 2916-F-08 TK-102, TK-110 & TK-112
6"C.S.
P-103F
P-104F
P-105F
P-106F
P-109F
FROM SR-160A, SR-173A DWG. NO. 2916-F-07 AND SR-163A
FROM SR-167A, SR-DCT DWG. NO. 2916-F-07 SR-173B AND SR-160C
FROM STORAGE TANKS DWG. NO. 2916-F-08 TK-101 & TK-107
1-1/2"C.S.
3"C.S.
4"C.S.
1"C.S.
E.V.
F.A.
TK-103
TK-104
TK-105
TK-106
TK-109
SAMPLE PORT
P-103D
P-104D
P-105D
P-106D
P-109D
P-103S
P-104S
P-105S
TO DRAIN MANIFOLD DWG.#2916-F-07

NOTES:

1. ALL PIPING IS CARBON STEEL UNLESS OTHERWISE SPECIFIED.
2. HOSE CONNECTIONS ARE MADE WITH QUICK COUPLING WITH A VALVE ON THE RIGID PIPE SIDE. PIPE CAPS AND HOSE CONNECTIONS ARE 316SS W/PTFE GASKET.
3. ALL HOSES ARE CHEMICAL RESISTANT REINFORCED RUBBER.
4. FOR CLARITY PIPE REDUCERS, COUPLINGS AND FLANGED CONNECTIONS ARE NOT SHOWN.

LEGEND

- HAND OPERATED ON-OFF VALVE (NORMALLY OPEN)
- HAND OPERATED ON-OFF VALVE (NORMALLY CLOSED)
- SWING CHECK VALVE
- HAND OPERATED ON-OFF VALVE WITH REMOTE POSITION INDICATOR
- AIR ACTUATED VALVE
- SELF PRESSURE REGULATING VALVE
- MIXER
- INDICATES DIRECTION OF FLOW

- AOV — AIR OPERATED VALVE
- A/S — AIR SUPPLY
- C.V. — CONSERVATION VENT (PRESSURE & VACUUM)
- E.V. — EMERGENCY VENT FOR PRESSURE RELIEF
- F.A. — FLAME ARRESTER
- C.S. — CARBON STEEL
- DPS — DIFFERENTIAL PRESSURE SWITCH L-LOW & H-HIGH
- DPAL — LOW PRESSURE ALARM
- DPAH — HIGH PRESSURE ALARM
- LAH — LEVEL ALARM HIGH
- LAHH — LEVEL ALARM HIGH-HIGH
- LALL — LEVEL ALARM LOW-LOW
- LSH — LEVEL SWITCH HIGH
- LSL — LEVEL SWITCH LOW
- LT — LEVEL TRANSMITTER - CONTINUOUS
- SP — SET POINT - LL (LOW-LOW LEVEL) - L (LOW LEVEL) - H (HIGH LEVEL)
- TI — TEMPERATURE INDICATOR
- HTA — HIGH TEMPERATURE ALARM
- PSV — SAFETY PRESSURE RELIEF
- PSV — SAFETY PRESSURE RELIEF VALVE
- AIR OPERATED DOUBLE DIAPHRAGM PUMP
- CENTRIFUGAL PUMP

REV.#	REVISION NOTES
H	ADDED SAFETY RELIEF (SPD), ADDED CHECK VALVE IN TANK FILL LINE. REVISED LEGEND. ADDED SECOND SAMPLE PORT PER TANK, IDENTIFIED VALVES WITH POSITION INDICATORS, ADDED PIPE NUMBERS ISOLATED EMISSIONS FROM FUELS BLENDING SYSTEM.
G	REMOVED ITEM #160, REMOVED TANKS #101, 102, 107, &110. REVISED #5. ADDED HIGH PRESS. ALARM. CHANGED ITEM 167 TO AIR DIAPHRAGM PUMP, REVISED LEGEND. ADDED SAMPLE PORTS ON TANKS.
F	ADDED PUMP SYMBOL TO LEGEND

CHCI DWG. NO. 4207

H	SEE REVISION NOTE H	B.H.P.	B.H.P.	B.H.P.	1/17/95
G	SEE REVISION NOTE G	B.H.P.	B.H.P.	B.H.P.	1/17/95
F	SEE REVISION NOTE F	K.M.C.	A.M.L.	A.M.L.	8/1/94
E	RCRA PART B MODIFICATION	K.M.C.	B.H.P.	B.H.P.	7/28/94
D	RCRA PART B SUBMITTAL UPDATE		M.V.		02/16/92
C	RCRA PART B SUBMITTAL UPDATE	K.M.C.	B.H.P.	B.H.P.	2/14/92
B	RCRA PART B SUBMITTAL UPDATE	K.M.C.	A.M.L.	A.M.L.	2/1/91
A	RCRA PART B SUBMITTAL	K.M.C.	P.W.	P.W.	8/16/90
SYMBOL	DESCRIPTION	ORIGINAL	CHANGE	APPROVAL	DATE

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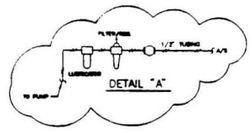
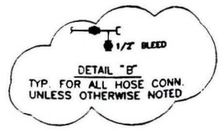
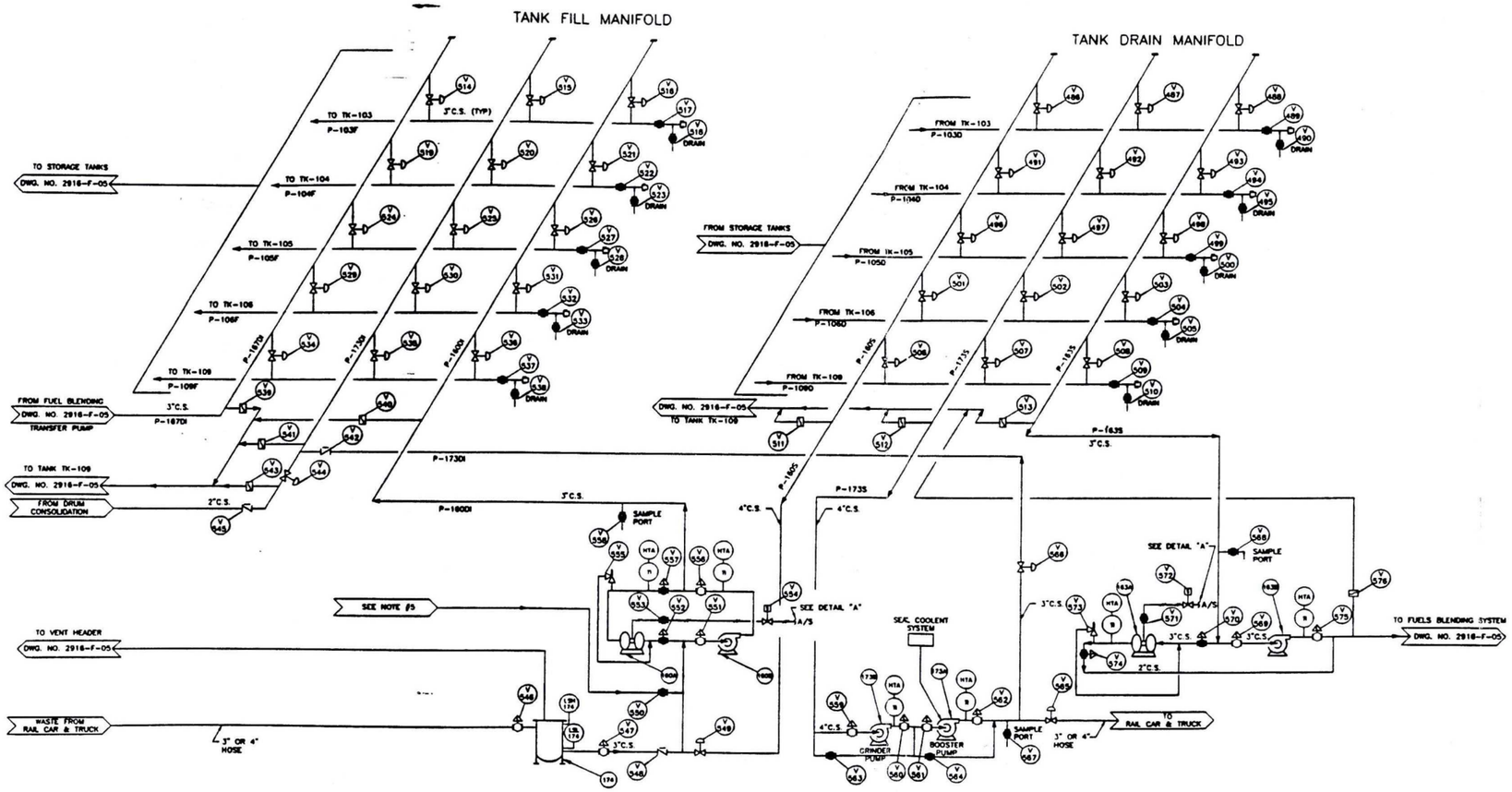
TITLE
CLEAN HARBORS OF CHICAGO, INC.
11800 S. STONY ISLAND AVENUE
CHICAGO, ILLINOIS 60617
PROCESS FLOW, PIPING & INSTRUMENTATION DIAGRAM - MODIFIED FUELS BLENDING OPERATION
SHEET 3 OF 5

PROJECT NO. GW-5404
DRAWING NO. 2916-F-05
SCALE NONE

ITEM NO	QTY.	DESCRIPTION
160A	1	200 GPM RECEIVING PUMP, AIR OPERATED DOUBLE DIAPHRAGM PUMP CAST IRON HOUSING WITH VITON DIAPHRAGMS.
160B	1	200 GPM RECEIVING PUMP, HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER, 316SS CONSTRUCTION, DOUBLE MECH SEAL WITH BARRIER FLUID.
163A	1	100 GPM RECIRCULATING/BLENDING SUPPLY PUMP, AIR OPERATED DOUBLE DIAPHRAGM PUMP, CAST IRON HOUSING WITH VITON DIAPHRAGMS.
163B	1	100 GPM RECIRCULATING/BLENDING SUPPLY PUMP, CENTRIFUGAL PUMP WITH OPEN IMPELLER, DUCTILE IRON CONSTRUCTION, DOUBLE MECH SEAL WITH BARRIER FLUID.
173A	1	250 GPM BOOSTER PUMP, HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER, DUCTILE IRON CONSTRUCTION, DOUBLE MECH SEAL WITH BARRIER FLUID.
173B	1	250 GPM GRINDER PUMP, MODEL 10x6 MEGAGRINDER WITH CLOSE LOOP SEAL COOLING SYSTEM AS MADE BY ARDE BARINCO INC. OR EQUIVALENT
174	1	STRAINER FOR TRANSFER PUMPS, ITEM #160A & 160B







NOTES:

1. ALL PIPING IS CARBON STEEL UNLESS OTHERWISE SPECIFIED.
2. HOSE CONNECTIONS ARE MADE WITH QUICK COUPLING WITH A VALVE ON THE RIGID PIPE. PIPE CAPS AND HOSE CONNECTIONS ARE 316SS W/PTFE GASKET LIDS.
3. ALL HOSES ARE CHEMICAL RESISTANT REINFORCED RUBBER
4. FOR CLARITY PIPE REDUCERS, COUPLINGS AND FLANGED CONNECTIONS ARE NOT SHOWN.
5. FROM HOSE CONNECTION OF DRAIN MANIFOLD OF TANKS #TK-101, TK-107 AND TK-112 FOR TANK TO TANK TRANSFER. THIS CONNECTION TO BE USED FOR ADDITION OF ANTIFOAM AND EMULSIFIER AGENTS INTO THE TANK.

LEGEND

- HAND OPERATED ON-OFF VALVE (NORMALLY OPEN)
- HAND OPERATED ON-OFF VALVE (NORMALLY CLOSED)
- HAND OPERATED ON-OFF VALVE WITH REMOTE POSITION INDICATOR
- SWING CHECK VALVE
- AIR ACTUATED VALVE
- SOLENOID VALVE
- SELF PRESSURE REGULATING VALVE
- M MIXER
- INDICATES DIRECTION OF FLOW
- HOSE CONNECTION

AOV	AIR OPERATED VALVE
A/S	AIR SUPPLY
C.V.	CONSERVATION VENT (PRESSURE & VACUUM)
E.V.	EMERGENCY VENT FOR PRESSURE RELIEF
F.A.	FLAME ARRESTER
C.S.	CARBON STEEL
DP	DIFFERENTIAL PRESSURE SWITCH
LOW P	LOW PRESSURE ALARM
HIGH P	HIGH PRESSURE ALARM
LAH	LEVEL ALARM HIGH
LAHH	LEVEL ALARM HIGH-HIGH
LALL	LEVEL ALARM LOW-LOW
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LI	LEVEL INDICATOR - CONTINUOUS
SP	SET POINT - LL (LOW-LOW LEVEL) - L (LOW LEVEL) - H (HIGH LEVEL)
R	TEMPERATURE INDICATOR
HTA	HIGH TEMPERATURE ALARM
SR (BURIED)	SAFETY PRSSURE RELIEF
SR (EXPOSED)	SAFETY PRSSURE RELIEF VALVE

AIR OPERATED DOUBLE DIAPHRAGM PUMP

CENTRIFUGAL PUMP

REV.#	REVISION NOTES
D	ADDED SAFETY RELIEF INFO., ADDED) "HTA" AND RELOCATED "TI", REVISED LEGEND, REMOVED AOV-140A & AOV-180C, IDENTIFIED VALVES WITH POSITION INDICATORS, ADDED PIPE NUMBERS
C	REVISED ITEM #160,163 &173, ADDED DETAIL "B", ADDED TEMP. INDICATORS ASSIGN ITEM # TO STRAINERS, REVISED ITEM DESCRIPTION TABLE, REVISED NOTE #2, REVISED LEGEND, REMOVED TANKS 101,102,107,110 MANIFOLD. REMOVED PUMPS #157, REMOVED TANK #112 & PIPING.
B	ADDED PUMP & STRAINER BASKET (THINGS) TO LEGEND, AOV-159 AND SEAL COOLENT SYSTEM TO GRINDER PUMP, REVISED DISCHARGE LINE FROM PUMP ITEM NO. 163 TO TANK FILL MANIFOLD

CHCI DWG. NO. 4207

ISSUE	DESCRIPTION	DRWN	CHKD	APPR	DATE
D	SEE REVISION NOTE D	R.M.P.	B.H.P.	B.H.P.	3/16/95
C	SEE REVISION NOTE C	B.H.P.	B.H.P.	B.H.P.	1/17/95
B	SEE REVISION NOTE B	K.M.C.	A.M.L.	A.M.L.	9/1/94
A	RCRA PART B MODIFICATION	K.M.C.	B.H.P.	B.H.P.	7/20/94

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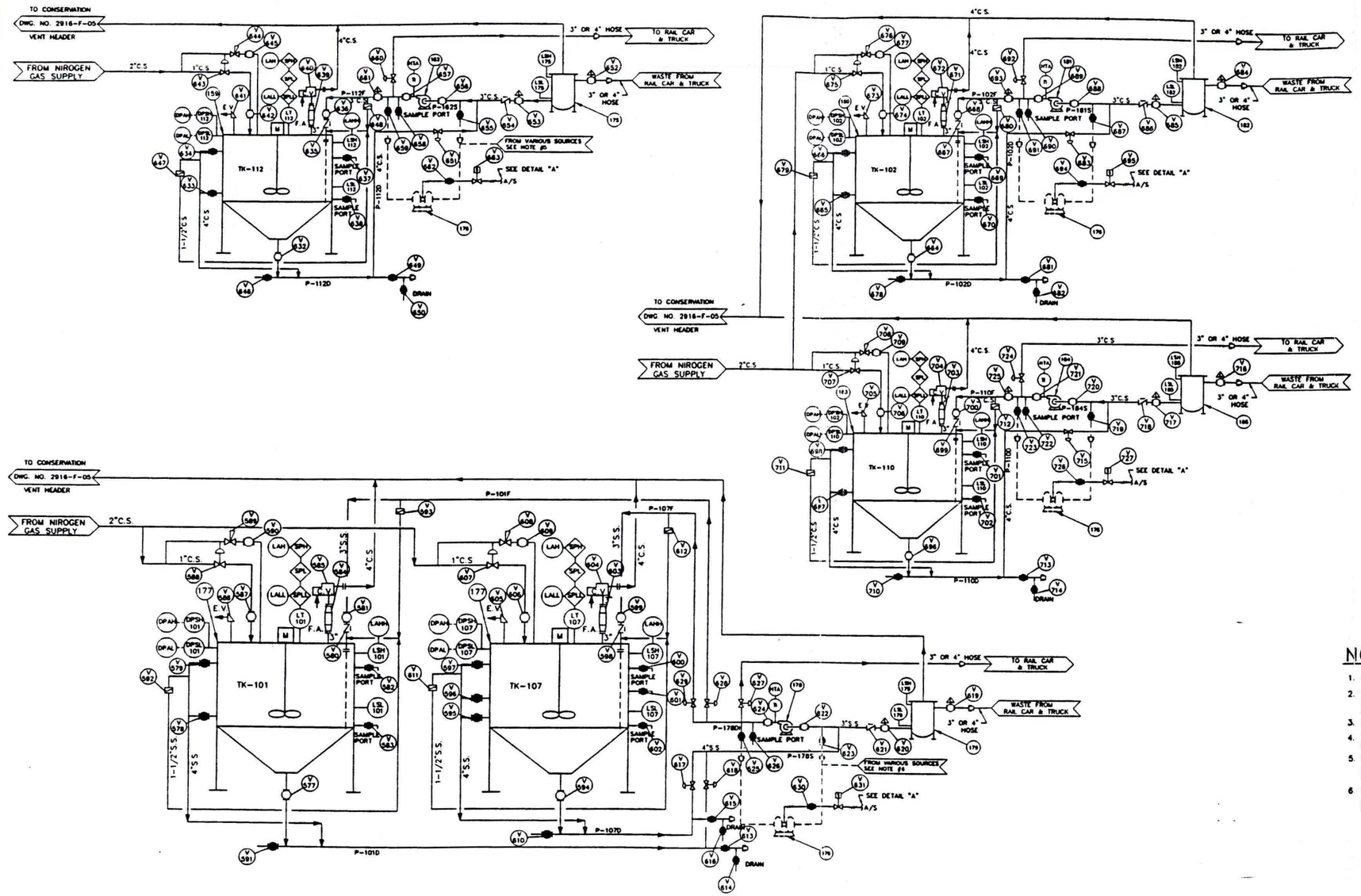
11800 S. STONY ISLAND AVENUE
CHICAGO, ILLINOIS 60617
PROCESS FLOW, PIPING & INSTRUMENTATION DIAGRAM - MODIFIED FUELS BLENDING OPERATION
SHEET 4 OF 5

PROJECT NO. GW-5404
DRAWING NO. 2916-F-07
SCALE NONE



ITEM NO.	QTY.	DESCRIPTION
159	1	19,800 GAL. IGNITABLE WASTE STORAGE TANK - TK-112
162	1	200 GPM RECEIVING PUMP. HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER. IRON CONSTRUCTION. DOUBLE MECH SEAL WITH BARRIER FLUID.
175	1	STRAINER FOR TRANSFER PUMP, ITEM #162
176	2	200 GPM PORTABLE TRANSFER PUMP. AIR OPERATED DOUBLE DIAPHRAGM PUMP. CAST IRON HOUSING WITH VITON DIAPHRAGMS
177	2	12,800 GAL. ACIDIC/IGNITABLE WASTE STORAGE TANK (TK-101 & TK-107)
178	1	200 GPM RECEIVING PUMP. HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER. SS316 CONSTRUCTION. DOUBLE MECH SEAL WITH BARRIER FLUID.
179	1	STRAINER FOR TRANSFER PUMP, ITEM #178
180	1	12,800 GAL. PCB WASTE STORAGE TANK - TK-102
181	1	200 GPM RECEIVING PUMP. HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER. IRON CONSTRUCTION. DOUBLE MECH SEAL WITH BARRIER FLUID.
182	1	STRAINER FOR TRANSFER PUMP, ITEM #181
183	1	12,800 GAL. PCB WASTE STORAGE TANK - TK-110
184	1	200 GPM RECEIVING PUMP. HORIZONATAL CENTRIFUGAL PUMP WITH OPEN IMPELLER. IRON CONSTRUCTION. DOUBLE MECH SEAL WITH BARRIER FLUID.
185	1	STRAINER FOR TRANSFER PUMP, ITEM #184

LEGEND

- HAND OPERATED ON-OFF VALVE (NORMALLY OPEN)
- HAND OPERATED ON-OFF VALVE (NORMALLY CLOSED)
- HAND OPERATED ON-OFF VALVE WITH REMOTE POSITION INDICATOR
- SWING CHECK VALVE
- AIR ACTUATED VALVE
- SOLENOID VALVE
- SELF PRESSURE REGULATING VALVE
- M — MIXER
- INDICATES DIRECTION OF FLOW
- HOSE CONNECTION

AOV	AIR OPERATED VALVE
A/S	AIR SUPPLY
C.V.	CONSERVATION VENT (PRESSURE & VACUUM)
E.V.	EMERGENCY VENT FOR PRESSURE RELIEF
F.A.	FLAME ARRESTER
C.S.	CARBON STEEL
S.S.	STAINLESS STEEL
DPS	DIFFERENTIAL PRESSURE SWITCH L-LOW & H-HIGH
DPAL	LOW PRESSURE ALARM
DPAH	HIGH PRESSURE ALARM
LAH	LEVEL ALARM HIGH
LAHH	LEVEL ALARM HIGH-HIGH
LAL	LEVEL ALARM LOW-LOW
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LT	LEVEL TRANSMITTER - CONTINUOUS
SP	SET POINT - LL (LOW-LOW LEVEL) - L (LOW LEVEL) - H (HIGH LEVEL)
TI	TEMPERATURE INDICATOR
HTA	HIGH TEMPERATURE ALARM
SR (GAS/VAPOR)	SAFETY PRSSURE RELIEF
SR (LIQUID)	SAFETY PRSSURE RELIEF VALVE

- PORTABLE AIR OPERATED DOUBLE DIAPHRAGM PUMP
- CENTRIFUGAL PUMP

NOTES:

1. ALL PIPING IS CARBON STEEL UNLESS OTHERWISE SPECIFIED.
2. HOSE CONNECTIONS ARE MADE WITH QUICK COUPLING WITH A VALVE ON THE RIGID PIPE SIDE. PIPE CAPS AND HOSE CONNECTIONS ARE 316SS W/PTFE GASKET.
3. ALL HOSES ARE CHEMICAL RESISTANT REINFORCED RUBBER.
4. FOR CLARITY PIPE REDUCERS, COUPLINGS AND FLANGED CONNECTIONS ARE NOT SHOWN.
5. FROM HOSE CONNECTION OF DRAIN MANIFOLD OF TANKS #TK-101, TK-107, TK-109 AND TK-103 THRU TK-106 FOR TANK TO TANK TRANSFER. THIS CONNECTION TO BE USED FOR ADDITION OF ANTIFOAM AND IMULSIFIER AGENTS INTO THE TANK.
6. FROM HOSE CONNECTION OF DRAIN MANIFOLD OF TANKS #TK-112, TK-109 AND TK-103 THRU TK-106. FOR TANK TO TANK TRANSFER. THIS CONNECTION TO BE USED FOR ADDITION OF ANTIFOAM AND IMULSIFIER AGENTS INTO THE TANK.

CHCI DWG. NO. 4207

REV.#	REVISION NOTES	DRWN	CHKD	APPR	DATE
B	ADDED SAFETY RELIEF INFO., ADDED "HTA" AND RELOCATED "TI", REVISED LEGEND, CORRECTED VALVE DESIGNATIONS, IDENTIFIED VALVES WITH POSITION INDICATORS, ADDED PIPE NUMBERS, ADDED SECOND SAMPLE PORT PER TANK, ADDED CHECK VALVE IN TANK FILL LINE, REVISED N2 SUPPLY	B.H.P.	B.H.P.	B.H.P.	5/16/95
A	RCRA PART B MODIFICATION	B.H.P.	B.H.P.	B.H.P.	1/17/95

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TITLE
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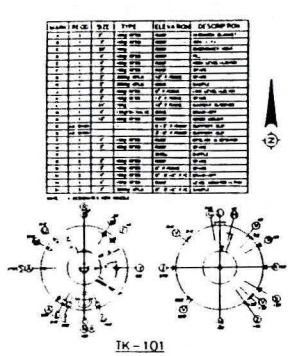
11800 S. STONY ISLAND AVENUE
CHICAGO, ILLINOIS 60617
PROCESS FLOW, PIPING & INSTRUMENTATION DIAGRAM - TANK FARM OPERATION SHEET 5 OF 5

PROJECT NO.	DRAWING NO.
GW-5404	2916-F-08
SCALE: NONE	



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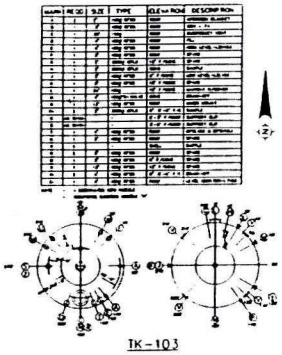

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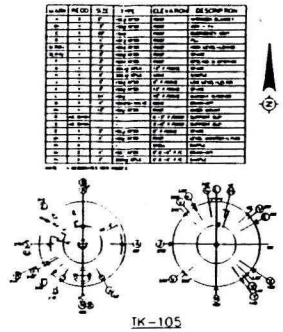

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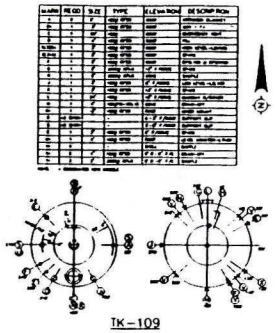

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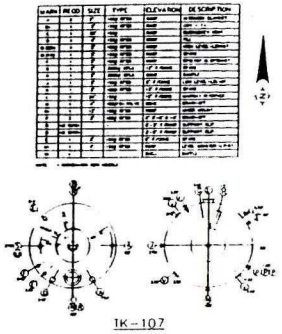

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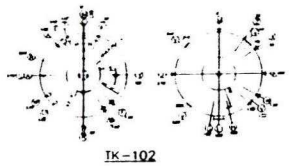

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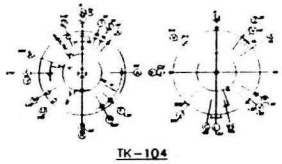

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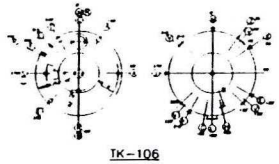

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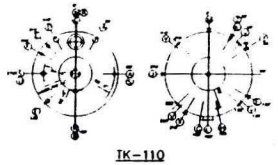

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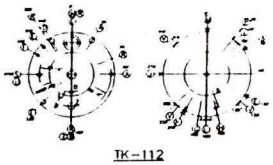

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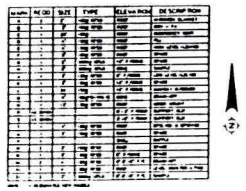
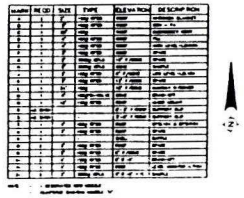
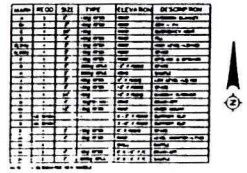
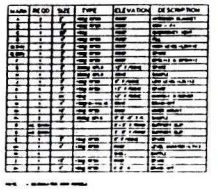








CHCI DWG. NO. 4256

A	RCRA PART B MODIFICATION				

CleanHarbors
ENVIRONMENTAL SERVICES INC

CLEAN HARBORS OF CHICAGO, INC.
11800 S. STONY ISLAND AVENUE
CHICAGO, ILLINOIS 60617

FLAMMABLE STORAGE TANKS
NOZZLE ORIENTATION & USE

GW-5404

NONE

5404-M-01

Clean Harbors®
ENVIRONMENTAL SERVICES, INC.
11800 SOUTH STONY ISLAND AVENUE • CHICAGO, IL 60617
(800) 678-4244 • FAX (312) 646-6381

Certified Mail #Z781266065

December 7, 1995

Regional Administrator
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

Dear Sir:

Clean Harbors of Chicago, Inc. operates a commercial hazardous waste storage, transfer, and treatment facility. The HSWA permit (ILD000608471) issued September 30, 1993 by USEPA requires the facility to comply with HSWA air emission requirements from certain process vents and from equipment leaks related to hazardous waste tank operations when those units become operational. On November 8, 1995 units became operational which are subject to the requirements of 40 CFR Part 264, Subpart BB regarding air emission standards for equipment leaks. These units include the tank farm, fuel blending system, and ancillary equipment. This notification is to satisfy Condition IV.D from the HSWA permit regarding the startup of waste management units subject to those requirements. There are no waste management units subject to 40 CFR Part 264, Subpart AA requirements are included in the existing Part B permit.

If you have any further questions, please contact me at (312)646-6202.

Sincerely,

James R. Laubsted
Facility Compliance Manager

RECEIVED
DEC 08 1995
U. S. EPA REGION 5
OFFICE OF REGIONAL ADMINISTRATOR

Clean Harbors of Chicago, Inc. may at any time have any of the waste codes listed in Attachment A at the facility. The following is an estimate of the quantity of various types of waste which may be present at the facility:

D001 (Ignitable Waste) Estimated maximum volumes of 998 drums, 2 railcars, 19 transportation vehicles, and 136,300 gallons of tank storage. This could also include hazardous waste codes F003, F005, K108 and ignitable U-coded wastes.

D002 (Corrosive Waste) Both acid and alkaline appropriately segregated. Estimated maximum volumes of 1514 drums, 24 transportation vehicles, 2 railcars, and 142,400 gallons of tank storage. This could also include K107, K111, K124, K131, K062, U006, U020, U023, U123, and U134 wastes. This estimate does not include RCRA-exempt storage of a maximum of approximately 3,000,000 gallons in tanks.

D003 (Reactive Waste) Estimated maximum volumes of 629 drums, 18 transportation vehicles, 2 railcars, and 142,050 gallons in tanks. This could also include F007-F011, K011, K013, K027, K044-K047, P-coded and U-coded reactive wastes. This estimate does not include D003 reactive waste in RCRA-exempt storage of a maximum of approximately 3,000,000 gallons.

D004-D043 (Toxicity Characteristic Wastes) Estimated maximum volumes of 1834 drums, 22 transportation vehicles, 2 railcars, 264,000 gallons in tanks, and 10-30 cubic yard roll-off boxes. An additional 3,000,000 gallons in tanks could be in RCRA-exempt storage.

P-coded (Acute Hazardous Wastes) Estimated maximum volume of 816 drums, 6 transportation vehicles, and 3-30 yard roll-off boxes. This could include F020-F027 wastes.

U-coded (Toxic wastes) Estimated maximum volumes of 821 drums, 264,000 gallons in tanks, 10-30 cubic yard roll-off boxes, 2 railcars, and 22 transportation vehicles. This would also include F-coded and K-coded toxic wastes.

The following is an estimate of the typical inventory of wastes at the facility:

Containers:

Unit R1

Staging	65-55 gallon drums 10-16 gallon drums, 20-5 gallon pails. These can be any acceptable waste, but are segregated by compatibility.
Flammable #1	145-55 gallon drums, flammable
Flammable #2	100-55 gallon drums, 40-16 gallon drums, 60-5 gallon pails, flammable
Poison	60-55 gallon drums, 20-16 gallon drums, 40-5 gallon pails, poison
Reactive	60-55 gallon drums, 20-16 gallon drums, 40-5 gallon pails, cyanide/sulfide bearing, water reactives
Oxidizers	60-55 gallon drums, 20-16 gallon drums, 40-5 gallon pails, oxidizers

Unit R2

This unit is permitted but not existing. Each of these areas will have a similar inventory to the above existing area. The individual units are:

Flammable #3

Poison #2

Oxidizer #2

Reactive #2

Staging #2

Unit F1

Lab Pack Pour-off	Two gondolas (containment pallets) of 100 gallons of unpacked corrosive metal-bearing labpacks

Unit U

Acids	Four 55-gallon drums of acid labpacks
Bases	Four 55-gallon drums of basic labpacks
Organics	Four 55-gallon drums of organic labpacks
Oxidizers	Four 55-gallon drums of oxidizer labpacks
Pesticides	Four 55-gallon drums of pesticide labpacks
Organic P/O	Four 55-gallon drums of organic labpacks
Flammable	Five 55-gallon drums of flammable labpacks

Unit G1

Staging	50-55 gallon drums, 10-16 gallon drums, 10-5 gallon pails of corrosive metal bearing wastes
Alkaline	160-55 gallon drums, 10-16 gallon drums, 10-5 gallon pails of alkaline metal bearing wastes
Acidic-1	160-55 gallon drums, 10-16 gallon drums, 10-5 gallon pails of acidic metal bearing wastes
Acidic-2	80-55 gallon drums, 10-16 gallon drums, 10-5 gallon pails of acidic metal bearing wastes

Unit 25

Alkaline	200-55 gallon drums, 100-16 gallon drums 100-5 gallon pails of alkaline metal bearing wastes
Acids	170-55 gallon drums, 100-16 gallon drums 100-5 gallon pails of acidic metal bearing wastes
Poison/PCB	75-55 gallon drums, 30-16 gallon drums, 50-5 gallon pails of poison and/or PCB wastes

Unit 26

Flammable	140-55 gallon drums, 50-16 gallon drums, 100-5 gallon pails of flammables

Unit 61

Flammable	120-55 gallon drums, 50-16 gallon drums, 50-5 gallon pails of flammables

Roll-Off Containers

Unit Q1

3-20 cubic yard roll-off boxes, solids with no free liquids

Unit B

4-20 cubic yard roll-off boxes, solids with no free liquids
1 Transportation vehicle of 80-55 gallon drums

Railcars

Unit 13

2 Railcars of hazardous waste fuel

Transportation Units

Unit Q

2 Transportation vehicles of 80-55 gallon drums

Unit C

5 Transportation vehicles of acidic or alkaline wastes

Unit 59

2 Transportation vehicles of flammable waste

Unit 15

2 Transportation vehicles of flammable waste

Unit 62

3 Transportation vehicles of 80-55 gallon drums

The following transportation vehicle areas are not constructed, but would be expected to operate near capacities:

Unit V 3 Transportation vehicles

Unit X 2 Transportation vehicles

Unit W 4 Transportation vehicles

Tanks

Unit 16 (Flammable Tankfarm)

5 tanks of hazadous waste fuels (50,000 gallons)

3 tanks of organic contaminated wastewaters (30,000 gallons)

2 tanks of PCBs (15,000 gallons)

Unit 43

2 tanks of hazardous waste fuels (1200 gallons)

The following tanks are permitted, but not existing and expected to operate near capacities:

Unit Y

8-11,000 gallon tanks of mixed wastewaters

Unit Z (Mixed wastewaters)

13,570 gallon reactor
1200 gallon lamella clarifier
4100 gallon collection tank
1270 gallon sludge conditioning tank
Two-750 gallon sand filters
3770 gallon backwash collection tank
Two-1300 gallon carbon adsorption units
2640 gallon effluent tank

Unit Z1

20-cubic yard roll-off box

RCRA-Exempt Wastewater Treatment

The facility is operating wastewater treatment units and four wastewater treatment storage tanks operated under the Clean Water Act:

Effluent - averaging 100,000 gallons of treated wastewater

Primary - averaging 120,000 gallons of mixed inorganic wastewaters

Sludge Concentrator - averaging 172,000 gallons of treated metal bearing sludge

Mix - averaging 200,000 gallons of mixed inorganic wastewaters

The facility treats these wastewaters in treatment tanks located in Units F, G, and J.

The facility is in the process of permitting additional wastewater treatment on the former CWM portion of the site. This includes additional treatment tanks and four-500,000 gallon storage tanks.

Application of a Screening Technique to Determine Recommended Amounts of Hazardous Wastes Which may Trigger Notification of Local Emergency Response Officials

1.0 SCOPE

This analysis was conducted in response to an Illinois Environmental Protection Agency (IEPA) request that Clean Harbors of Chicago, Inc. (the Company) provide information on the amount of a spill of hazardous materials that could cause conditions at the Company property line which would warrant further investigations and/or actions to be taken by local or state officials. The IEPA requested that information be base upon the nearest property line to the regulated units, and that the air quality criterion which would "trigger" a notification would be based upon the 0.1 IDLH (Immediately Dangerous to Life or Health) or similar threshold concentration level for each hazardous material.

2.0 BACKGROUND

The Company proposed a protocol to the IEPA which would describe how this analysis could be undertaken. In brief, the analysis required a statistically significant number of ARCHIE computer simulations to develop a relationship between expected ambient concentrations and physical parameters of gaseous hazardous materials. The preliminary work which established these relationships and worst case conditions was provided to IEPA in a report entitled, "An Evaluation of Potential Hazardous Material Emergencies Through Atmospheric Transport from the Current and Proposed Clean Harbors Facility, Chicago, Illinois." The protocol which was suggested to the IEPA is described in a letter dated January 15, 1993 from Frank Sherman, Carlson Environmental, Inc., to Mark Schollenberger, IEPA, and in a response letter from Larry Eastep, IEPA, dated February 3, 1993. In addition, the protocol used in this analysis relied upon the following methodology for determining the Threshhold Limit Value for the modeling: the highest concentration was used that could be determined from one of the following three parameters:

1. 10% of the IDLH
2. Three times the value of the NIOSH or OSHA TLV
3. The value of the NIOSH or OSHA TLV ceiling

Only materials with threshold concentrations expressed in terms of ppm or for which a conversion factor was available in the handbook, were included in the process. There are materials which may be toxic that are not included in the NIOSH manual, and therefore are, by agreement, not included in this screening procedure. Substances for which such information is not available are solids over most expected ambient temperatures and therefore do not lend themselve to this type of hazard analysis.

3.0 TECHNICAL APPROACH

3.1 ARCHIE Modeling

Six compounds were evaluated to determine the spill area that corresponds to the Toxic Limit Value these materials would generate at a distance 25 meters from the source. These materials are:

Substance	10% IDLH
Benzene	50 ppm
Carbon Tetrachloride	25 ppm
Chloroform	50 ppm
Isopropylamine	400 ppm
Methyl Isocyanate	2 ppm
Nitromethane	100 ppm

For each of these substances, the surface area of a spill was determined that corresponded to the 0.1 IDLH concentrations at a distance of 25 meters from the pont of discharge. Since the ARCHIE model is designed to determine concentrations from a known release quantity, the model had to be executed several times for each constituent--in an iterative mode--until the target concentration was produced from the properly assumed spill area. The output of the modeling runs which closed on the proper downwind distance (i.e., 25 meters) are attached as Appendix 2. Similar runs were also conducted at a downwind distance of 100 meters. These runs are presented in Appendix 3.

3.2 Regression Analyses

Dispersion of a pollutant can be estimated if, under conditions of fixed wind speed and stability, the molecular weight of the gas, the vapor pressure, and the release rate are known. Release rate is directly related to vapor pressure and area of release. For each pollutant, the product of the two thirds power of the molecular weight, the area of the release and the vapor pressure of the substance was determined. These parameters were compared with the trigger values indicated above in the "10% IDLH column. Normalizing for these physical characteristics, a straight line relationship should exist.

Three regression analyses were conducted. The target statistical significance was an R^2 of 0.81. The results of these analyses are indicated below:

Run	Description	Constant	Slope	R^2
1	d = 25 meters, plot through origin	0	0.009239	0.973
2	d = 100 meters, plot through origin	0	0.000622	0.975

All correlation coefficients were well within the acceptance level. For physical reasons, the correlation was forced through the origin.

3.3 Screening Procedure

Two hundred and twenty six (226) substances contained sufficient information in the NIOSH handbook (1990) to allow the application of the screening procedure. The results of the screening procedures utilizing Runs 1 and 2 are presented in Appendices 4 and 5, respectively. The last column in each table consists of the screening equation indicated below:

$$\text{Volume} = a*(\text{ppm} - b)/\{c*(MW)^{0.66}*(VP)$$

where:

Volume =	Volume of spill, in liters
a =	Volume correction factor (0.929 ft^2-cm/liter)
ppm =	Toxic Limit Value
b =	Regression constant
c =	Regression slope
MW =	Molecular weight
VP =	Vapor pressure in mmHg

Each listing is provided in alphabetical order, CAS left-justified digit order, and order of descending spill trigger volume.

4.0 RESULTS

Perhaps the most likely unit of spill is one barrel or less. Assuming 55 gallons in one barrel, the screening procedure will identify which materials should be reported if less than one barrel is spilled in any mishap.

Run #	#Materials Above 1 Barrel	# Materials Below 1 Barrel	% Below 1 Barrel
1 (d=25m)	75	151	67
2 (d=100m)	160	66	29

As expected, the amount of spill which may trigger a notification procedure is a strong function of downwind distance.

Many of the substances for which data were reported are solids at most ambient temperatures, but were included in the analysis none-the-less: each material should be reviewed for the likelihood that it would be in a state that would lend itself to atmospheric dispersion.

Unit #	CAS Number	Name (Pure substances)	Density	Trigger Conc. (ppm)	Mole. Weight	Vapor Press. mmHg	Resultant Spill Vol. (gallons)	Resultant Spill Amt. (pounds)
1	75-07-0	Acetaldehyde	0.79	1000	44.1	740	43.81	288.56
2	64-19-7	Acetic Acid	1.05	100	60.1	11	240.25	2103.34
3	108-24-7	Acetic anhydride	1.08	100	102.1	4	465.70	4193.50
4	67-64-1	Acetone	0.79	2250	58.1	180	337.81	2225.10
5	75-05-8	Acetonitrile	0.78	400	41.1	73	186.09	1210.22
6	79-27-6	Acetylene tetrabromide	2.97	3	345.7	0.02	1249.31	30936.81
7	107-02-8	Acrolein	0.84	0.5	56.1	210	0.07	0.46
8	107-13-1	Acrylonitrile	0.81	50	53.1	83	17.28	116.68
9	107-18-6	Allyl alcohol	0.85	15	58.1	17	23.85	169.00
10	107-05-1	Allyl chloride	0.94	30	76.5	295	2.29	17.96
11	106-92-3	Allyl glycidyl ether	0.97	27	114.2	2	233.56	1888.93
12	628-63-7	n-Amyl acetate	0.88	400	130.2	5	1269.31	9313.20
13	626-38-0	sec-Amyl acetate	0.87	900	130.2	7	2039.97	14797.55
14	62-53-3	Aniline and homolongs	1.02	10	93.1	0.6	329.96	2806.15
15	90-04-0	o-Anisidine	1.1	1	123.2	0.1	164.56	1509.24
16	104-94-9	p-Anisidine	1.07	1	123.2	0.1	164.56	1468.08
17	71-43-2	Benzene	0.88	300	78.1	75	88.93	652.47
18	100-44-7	Benzyl chloride	1.1	3	126.6	1	48.49	444.71
19	7726-95-6	Bromine	3.12	1	159.8	172	0.08	2.10
20	75-25-2	Bromoform	2.89	1.5	252.8	5	3.07	74.02
21	78-93-3	2-Butanone	0.81	600	72.1	71	198.05	1337.55
22	111-76-2	2-Butoxyethanol	0.9	75	118.2	0.8	1585.50	11897.50
23	123-86-4	n-Butyl acetate	0.88	1000	116.2	15	1140.24	8366.13
24	105-46-4	sec-Butyl acetate	0.86	1000	116.2	24	712.65	5110.00
25	71-36-3	n-Butyl alcohol	0.81	800	74.1	6	3068.89	20725.89
26	78-92-2	sec-Butyl alcohol	0.81	1000	74.1	24	959.03	6476.84
27	75-65-0	tert-Butyl alcohol	0.79	800	74.1	42	438.41	2887.73
28	109-73-9	Butylamine	0.74	200	73.2	82	56.59	349.17
29	2426-08-6	n-Butyl glycidyl ether	0.91	350	130.2	3	1851.08	14044.76
30	109-79-5	Butyl mercaptan	0.83	250	90.2	35	144.40	999.27
31	98-51-1	p-tert-Butyltoluene	0.86	100	148.3	0.7	2080.04	14914.78
32	75-15-0	Carbon disulfide	1.26	50	76.1	297	3.81	40.00
33	56-23-5	Carbon tetrachloride	1.59	30	153.8	91	4.69	62.12
34	57-74-9	Chlordane	1.56	3	409.8	1E-05	2233293.19	29048107.28
35	55720-99-5	Chlorinated diphenyl oxide	1.6	0.12	376.9	6E-05	15734.13	209898.92
36	107-20-0	Chloroacetaldehyde	1.19	10	78.5	100	2.22	21.98
37	532-27-4	alpha-Chloroacetophenone	1.32	1.7	154.6	0.01	2408.20	26504.16
38	108-90-7	Chlorobenzene	1.11	240	112.6	12	349.25	3232.27
39	2698-41-1	o-Chlorobenzylidene malononitrile	?	0.03	188.6	1	0.37	0.00
40	74-97-5	Chlorobromomethane	1.93	600	129.4	160	59.74	961.35
41	53469-21-9	Chlorodiphenyl (42% Cl)	1.39	0.1	258	0.001	1010.31	11708.88
42	11097-69-1	Chlorodiphenyl (54% Cl)	1.39	0.03	326	6E-05	4328.81	50168.45
43	67-66-3	Chloroform	1.48	100	119.4	160	10.50	129.57
44	542-88-1	bis-Chloromethyl ether	1.32	0.003	115	30	0.0017	0.02
45	600-25-9	1-Chloro-1-nitropropane	1.21	200	123.6	6	547.35	5522.06
46	76-06-2	Chloropicrin	1.66	4	164.4	20	2.72	37.65
47	126-99-8	beta-Chloroprene	0.96	40	88.5	188	4.36	34.86
48	1319-77-3	Cresol (all isomers)	1.03	25	108.2	1	448.20	3849.08
49	123-73-9	Crotonaldehyde	0.87	40	70.1	19	50.26	364.60
50	98-82-8	Cumene	0.86	800	120.2	5	2676.12	19188.94
51	110-82-7	Cyclohexane	0.78	1000	84.2	98	215.87	1403.89
52	108-93-0	Cyclohexanol	0.96	350	100.2	1	6601.12	52836.75
53	108-94-1	Cyclohexanone	0.95	500	98.2	5	1911.30	15139.08
54	110-83-8	Cyclohexene	0.81	1000	82.2	160	134.33	907.23
55	17702-41-9	Decaborane	0.94	0.17	122.2	0.05	56.25	440.87
56	8065-48-3	Demeton	1.12	0.2	258.3	0.0003	6730.21	62848.39
57	123-42-2	Diacetone alcohol	0.94	210	116.2	1	3591.74	28150.14

Unit #	CAS Number	Name (Pure substances)	Density	Trigger Conc. (ppm)	Mole. Weight	Vapor Press. mmHg	Resultant Spill Vol. (gallons)	Resultant Spill Amt. (pounds)
58	96-12-8	1.2-Dibromo-3-chloropropane	2.05	0.003	236.4	0.8	0.04	0.69
59	107-66-4	Dibutyl phospnate	1.06	12.5	210.2	1	144.58	1277.76
60	84-74-2	Dibutylphthalate	1.05	30	278.3	0.01	76883.52	673085.21
61	95-50-1	o-Dichlorobenzene	1.3	100	147	1	1464.51	15873.89
62	106-46-7	p-Dichlorobenzene	1.25	225	147	0.4	8237.87	85856.38
63	75-34-3	1.1-Dichloroethane	1.18	400	99	230	33.06	325.29
64	540-59-0	1.2-Dichloroethylene	1.27	600	97	264	43.79	463.72
65	111-44-4	Dichloroethyl ether	1.22	25	143	0.7	532.65	5418.13
66	594-72-9	1.1-Dichloro-1-nitroethane	1.43	15	143.9	15	14.85	177.09
67	62-73-7	Dichlorvos	1.42	2.2	221	0.01	2461.76	29146.18
68	109-89-7	Diethylamine	0.71	200	73.1	192	24.19	143.21
69	100-37-8	2-Diethylaminoethanol	0.89	50	117.2	21	40.49	300.48
70	75-61-6	Difluorodibromomethane	2.29	300	209.8	620	5.60	106.99
71	2238-07-5	Diglycidyl ether	1.26	2.5	130.2	0.09	440.73	4630.14
72	108-83-8	Diisobutyl ketone	0.81	200	142.3	2	1496.26	10105.07
73	108-18-9	Diisopropylamine	0.72	100	101.2	70	26.77	160.69
74	127-19-5	Dimethyl acetamide	0.94	40	87.1	2	413.75	3242.76
75	121-69-7	Dimethylaniline	0.67	15	121.2	1	249.52	1393.87
76	300-76-5	Dimethyl-1.2-dibromo-2.2(etc.)	1.96	11.4	380.8	0.0002	445386.30	7278475.48
77	68-12-2	Dimethylformamide	0.95	350	73.1	4	2032.10	16095.91
78	57-14-7	1.1-Dimethylhydrazine	0.79	5	60.1	157	0.84	5.54
79	131-11-3	Dimethylphthalate	1.19	115	194.2	0.01	140144.26	1390496.15
80	77-78-1	Dimethyl sulfate	1.33	1	126.1	0.1	162.05	1797.00
81	117-81-7	Di-sec octyl phthalate	0.99	0.03	390.5	0.01	23.06	190.31
82	123-91-1	Dioxane	1.03	200	88.1	29	141.60	1216.06
83	92-52-4	Diphenyl	1.04	6	154.2	1	85.14	738.28
84	34590-94-8	Dipropylene glycol methylo ether	0.95	300	148.2	0.4	10925.05	86535.54
85	106-89-8	Epichlorohydrin	1.18	25	92.5	13	38.24	376.18
86	141-43-5	Ethanolamine	1.02	100	61.1	0.4	6535.44	55580.50
87	110-80-5	2-Ethoxyethanol	0.93	600	90.1	4	3034.55	23530.18
88	111-15-9	2-Ethoxyethyl acetate	0.98	300	132.2	2	2356.14	19251.92
89	141-78-6	Ethyl acetate	0.9	1200	88.1	74	332.96	2498.49
90	140-88-5	Ethyl acrylate	0.92	200	100.1	29	130.16	998.40
91	100-41-4	Ethyl benzene	0.87	300	106.2	10	544.50	3949.73
92	74-96-4	Ethyl bromide	1.46	600	109	400	26.76	325.77
93	106-35-4	Ethyl butyl ketone	0.82	300	114.2	4	1297.55	8871.25
94	107-07-3	Ethylene chlorohydrin	1.2	1	80.5	5	4.36	43.61
95	107-15-3	Ethylenediamine	0.91	200	60.1	11	480.51	3645.78
96	106-93-4	Ethylene dibromide	2.17	60	187.9	12	62.27	1126.70
97	107-06-02	Ethylene dichloride	1.24	100	99	64	29.70	307.11
98	628-96-6	Ethylene glycol dinitrate	1.49	8.2	152.1	0.05	2348.34	29173.89
99	151-56-4	Ethyleneimine	0.83	10	43.1	160	2.06	14.24
100	60-29-7	Ethyl ether	0.71	1900	74.1	440	99.39	588.37
101	109-94-4	Ethyl formate	0.92	800	74.1	200	92.07	706.22
102	75-08-1	Ethyl mercaptan	0.84	250	62.1	442	14.63	102.45
103	100-74-3	N-Ethylmorpholine	0.9	200	115.2	6	573.38	4302.61
104	78-10-4	Ethyl silicate	0.93	100	208.3	1	1163.56	9022.31
105	75-69-4	Fluorotrichloromethane	1.47	3000	137.4	690	66.58	816.00
106	50-00-0	Formaldehyde (gas)	1.08	3	30	760	0.17	1.49
107	50-00-0	Formaldehyde (aqueous solution)	1.1	3	30	1	125.41	1150.23
108	64-18-6	Formic acid	1.22	15	46	35	13.51	137.45
109	98-01-1	Furfural	1.16	25	96.1	1	484.69	4687.81
110	98-00-0	Furfuryl alcohol	1.13	30	98.1	1	573.78	5405.90
111	556-52-5	Glycidol	1.12	75	74.1	0.9	1918.05	17911.26
112	142-82-5	n-Heptane	0.68	1200	100.2	40	565.81	3207.95
113	67-72-1	Hexachloroethane	2.09	30	236.7	0.2	1604.14	27953.50
114	110-54-3	n-Hexane	0.66	500	86.2	150	69.43	382.08

Unit #	CAS Number	Name (Pure substances)	Density	Trigger Conc. (ppm)	Mole. Weight	Vapor Press. mmHg	Resultant Spill Vol. (gallons)	Resultant Spill Amt. (pounds)
115	591-78-6	2-Hexanone	0.81	500	100.2	4	2357.54	15921.79
116	108-10-1	Hexone	0.8	500	100.2	16	353.63	2358.78
117	108-84-9	sec-Hexyl acetate	0.86	400	144.2	3	1977.62	14180.44
118	302-01-2	Hydrazine	1.01	8	32.1	10	31.98	269.33
119	74-90-8	Hydrogen cyanide	0.69	5	27	630	0.36	2.05
120	7722-84-1	Hydrogen peroxide	1.39	7.5	34	5	57.73	669.11
121	7553-56-2	Iodine	4.93	1	253.8	0.3	34.04	1399.36
122	123-92-2	Isoamyl acetate	0.87	300	130.2	4	1189.98	8631.91
123	123-51-3	Isoamyl alcohol (primary)	0.81	1000	88.2	28	732.75	4948.66
124	628-75-4	Isoamyl alcohol (secondary)	0.82	1000	88.2	1	20516.95	140272.99
125	110-19-0	Isobutyl acetate	0.87	750	116.2	13	986.74	7157.65
126	78-83-1	Isobutyl alcohol	0.8	800	74.1	9	2045.92	13646.68
127	78-59-1	Isophorone	0.92	50	138.2	0.4	3050.82	23401.95
128	108-21-4	Isopropyl acetate	0.87	1600	102.2	42	709.18	5144.25
129	67-63-0	Isopropyl alcohol	0.79	1200	60.1	33	961.02	6330.04
130	75-31-0	Isopropylamine	0.69	400	59.1	460	23.24	133.68
131	108-20-3	Isopropyl ether	0.73	1500	102.2	119	234.65	1428.23
132	4016-14-2	Isopropyl glycidyl ether	0.92	150	116.2	9	285.06	2186.60
133	108-31-6	Maleic anhydride	1.48	0.8	98.1	0.2	76.50	944.04
134	141-79-7	Mesityl oxide	0.86	500	98.2	9	1061.83	7613.81
135	79-20-9	Methyl acetate	0.93	1000	74.1	173	133.04	1031.64
136	96-33-3	Methyl acrylate	0.96	100	86.1	65	32.07	256.70
137	109-87-5	Methylal	0.86	3000	76.1	330	205.60	1474.22
138	67-56-1	Methyl alcohol	0.79	2500	32.1	92	1086.38	7155.75
139	110-43-0	Methyl (n-amyl) ketone	0.81	400	114.2	3	2306.75	15578.79
140	109-86-4	Methyl Cellosolve	0.96	200	76.1	6	753.85	6034.00
141	110-49-6	Methyl Cellosolve acetate	1.01	400	118.1	2	3384.29	28499.41
142	71-55-6	Methyl chloroform	1.34	1050	133.4	100	163.95	1831.73
143	108-87-2	Methylcyclohexane	0.77	1200	98.2	43	533.39	3424.36
144	25639-42-3	Methylcyclohexanol	0.92	1000	114.2	2	8650.32	66354.09
145	583-60-8	o-Methylcyclohexanone	0.93	250	112.2	1	4375.89	33931.04
146	101-68-8	Methylene bisphenyl isocyanate	1.19	1	250.3	0.001	10307.13	102266.24
147	75-09-2	Methylene chloride	1.33	1500	84.9	350	90.17	999.92
148	107-31-3	Methyl formate	0.98	500	60.1	476	27.76	226.83
149	541-85-5	5-Methyl-3-heptanone	0.82	300	128.2	2	2404.40	16438.74
150	60-34-4	Methyl hydrazine	0.87	5	46.1	50	3.15	22.84
151	74-88-4	Methyl Iodide	2.28	80	141.9	400	3.00	56.99
152	108-11-2	Methyl isobutyl carbinol	0.81	200	102.2	3	1241.06	8381.58
153	624-83-9	Methyl isocyanate	0.96	2	57.1	348	0.16	1.26
154	80-62-6	Methyl methacrylate	0.94	400	100.1	40	188.73	1479.15
155	98-83-9	alpha-Methyl styrene	0.91	500	118.2	2	4227.99	32079.19
156	100-61-8	Monomethyl aniline	0.99	10	107.2	1	180.38	1488.94
157	110-91-8	Morpholine	1	800	87.1	6	2758.35	22998.33
158	8030-30-6	Naptha (coal tar)	0.93	1000	110	5	3546.77	27501.93
159	91-20-3	Naphthalene	1.15	50	128.2	0.08	10018.34	96059.70
160	13463-39-3	Nickel carbonyl	1.32	0.7	170.7	315	0.03	0.32
161	54-11-5	Nicotine	1.01	0.5	162.2	0.08	85.78	722.33
162	7697-37-2	Nitric acid	1.5	10	63	48	5.34	66.75
163	98-95-3	Nitrobenzene	1.2	20	123.1	1	329.29	3294.66
164	79-24-3	Nitroethane	1.05	300	75.1	16	427.76	3744.88
165	10102-44-0	Nitrogen dioxide	1.44	5	46	720	0.22	2.63
166	55-63-0	Nitroglycerine	1.6	5	227.1	0.0003	183175.51	2443626.92
167	75-52-5	Nitromethane	1.14	300	61	28	280.39	2665.14
168	108-03-2	1-Nitropropane	1	230	89.1	8	585.92	4885.26
169	79-46-9	2-Nitropropane	0.99	230	89.1	13	360.57	2976.25
170	88-72-2	ortho-Nitrotoluene	1.16	20	137.1	1	306.70	2966.28
171	99-08-1	meta-Nitrotoluene	1.16	20	137.1	1	306.70	2966.28

Unit #	CAS Number	Name (Pure substances)	Density	Trigger Conc. (ppm)	Mole. Weight	Vapor Press. mmHg	Resultant Spill Vol. (gallons)	Resultant Spill Amt. (pounds)
172	99-99-1	para-Nitrotoluene	1.12	20	137.1	1	306.70	2864.00
173	111-65-9	Octane	0.7	900	114.2	10	1557.06	9087.62
174	20816-12-0	Osmium tetroxide	5.1	0.001	254.2	11	0.0009	0.04
175	56-38-2	Parathion	1.27	0.2	291.3	4E-05	46625.90	493717.46
176	19624-22-7	Pentaborane	0.62	0.3	63.1	200	0.04	0.20
177	109-66-0	n-Pentane	0.63	1800	72.2	400	105.37	553.46
178	107-87-9	2-Pentanone	0.81	600	86.1	16	781.72	5279.39
179	594-42-3	Perchloromethyl mercaptan	1.69	1	185.9	65	0.19	2.72
180	8002-05-9	Petroleum distillates	0.645	1200	99	40	570.33	3067.12
181	108-95-2	Phenol	1.06	25	94.1	0.4	1228.66	10858.91
182	101-84-8	Phenyl ether	1.08	3	170.2	0.02	1994.25	17957.72
183	8004-13-5	Phenyl ether-biphenyl mixture	1.06	3	166	0.08	506.85	4479.56
184	122-60-1	Phenyl glycidyl ether	1.11	1	150.1	0.01	1444.48	13368.45
185	100-63-0	Phenylhydrazine	1.1	29.5	108.1	1	529.20	4853.55
186	7786-34-7	Phosdrin	1.25	0.4	224.2	0.003	1477.89	15402.77
187	7664-38-2	Phosphoric acid	1.87	246	98	0.03	156937.46	2446897.21
188	7719-12-2	Phosphorus trichloride	1.58	5	137.4	100	0.77	10.09
189	85-44-9	Phthalic anhydride	1.53	167	148	1	2434.81	31060.23
190	88-89-1	Picric acid	1.76	1	229.1	1	10.93	160.35
191	57-57-8	beta-Propiolactone	1.15	1.5	72.1	3	11.72	112.36
192	109-60-4	n-Propyl acetate	0.84	800	102.2	40	372.32	2607.60
193	71-23-8	n-Propyl alcohol	0.81	600	60.1	21	755.09	5099.52
194	78-87-5	Propylene dichloride	1.16	225	113	40	98.00	947.80
195	75-55-8	Propylene imine	0.8	50	57.1	112	12.20	81.40
196	75-56-9	Propylene oxide	0.83	200	58.1	445	12.15	84.05
197	627-13-4	n-Propyl nitrate	1.07	200	105.1	18	203.06	1811.56
198	110-86-1	Pyridine	0.98	360	79.1	20	396.82	3242.44
199	106-51-4	Quinone	1.32	7.5	108.1	0.1	1345.42	14807.43
200	100-42-5	Styrene	0.91	500	104.2	5	1837.93	13944.99
201	7664-93-9	Sulfuric acid	1.84	2	98.1	1	38.25	586.83
202	10025-67-9	Sulfer monochloride	1.68	1	135	7	2.21	31.00
203	5714-22-7	Sulfur pentafluoride	2.08	0.1	254.1	561	0.0018	0.03
204	3689-24-5	TEDP	1.2	0.3	322.3	0.0002	13084.63	130915.23
205	107-49-3	TEPP	1.19	0.1	290.2	0.0005	1869.70	18550.95
206	76-12-0	1,1,2,2-Tetrachloro-1,2-difluoroethane	1.65	1500	203.8	40	442.67	6089.90
207	79-34-5	1,1,2,2-Tetrachloroethane	1.59	15	167.9	9	22.36	296.40
208	127-18-4	Tetrachloroethylene	1.62	75	165.8	14	72.47	978.80
209	78-00-2	Tetraethyl lead	1.65	0.3	323.5	0.2	13.05	179.57
210	109-99-9	Tetrahydrofuran	0.89	2000	72.1	132	355.09	2634.99
211	75-74-1	Tetramethyl lead	2	0.4	267.3	23	0.17	2.86
212	509-14-8	Tetranitromethane	1.62	3	196	8	4.54	61.35
213	108-88-3	Toluene	0.87	300	92.1	20	299.09	2169.54
214	584-84-9	Toluene-2,4-diisosyanate	1.22	1	174.2	0.01	1309.27	13317.95
215	95-53-4	o-Toluidine	1.01	15	107.2	0.3	901.91	7595.08
216	126-73-8	Tributyl phosphate	0.98	12.5	266.3	127	0.97	7.96
217	79-00-5	1,1,2-Trichloroethane	1.44	50	133.4	19	41.09	493.34
218	79-01-6	Trichloroethylene	1.46	150	131.4	58	40.79	496.49
219	96-18-4	1,2,3-Trichloropropane	1.39	100	147.4	10	146.19	1694.24
220	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.56	3000	187.4	285	131.33	1708.22
221	121-44-8	Triethylamine	0.73	100	101.2	54	34.70	211.19
222	78-30-8	Triorthocresyl phosphate	1.2	0.3	368.4	2E-05	119795.99	1198591.05
223	8006-64-2	Turpentine	0.86	300	136	5	924.99	6632.60
224	25013-15-4	Vinyl toluene	0.89	500	118.2	1	8455.99	62748.30
225	1330-20-7	Xylenes (o-,m- and p- isomers)	0.87	300	106.2	9	605.00	4388.59
226	1300-73-8	Xylidine	0.98	15	121.2	1	249.52	2038.80

Unit #	CAS Number	Name (Pure substances)	Density	Trigger Conc. (ppm)	Mole. Weight	Vapor Press. mmHg	Resultant Spill Vol. (gallons)	Resultant Spill Amt. (pounds)
139	110-43-0	Methyl (n-amyl) ketone	0.81	400	114.2	3	2306.75	15578.79
141	110-49-6	Methyl Cellosolve acetate	1.01	400	118.1	2	3384.29	28499.41
114	110-54-3	n-Hexane	0.66	500	86.2	150	69.43	382.08
87	110-80-5	2-Ethoxyethanol	0.93	600	90.1	4	3034.55	23530.18
51	110-82-7	Cyclohexane	0.78	1000	84.2	98	215.87	1403.89
54	110-83-8	Cyclohexene	0.81	1000	82.2	160	134.33	907.23
198	110-86-1	Pyridine	0.98	360	79.1	20	396.82	3242.44
157	110-91-8	Morpholine	1	800	87.1	6	2758.35	22998.33
42	11097-69-1	Chlorodiphenyl (54% Cl)	1.39	0.03	326	6E-05	4328.81	50168.45
88	111-15-9	2-Ethoxyethyl acetate	0.98	300	132.2	2	2356.14	19251.92
65	111-44-4	Dichloroethyl ether	1.22	25	143	0.7	532.65	5418.13
173	111-65-9	Octane	0.7	900	114.2	10	1557.06	9087.62
22	111-76-2	2-Butoxyethanol	0.9	75	118.2	0.8	1585.50	11897.50
81	117-81-7	Di-sec octyl phthalate	0.99	0.03	390.5	0.01	23.06	190.31
221	121-44-8	Triethylamine	0.73	100	101.2	54	34.70	211.19
75	121-69-7	Dimethylaniline	0.67	15	121.2	1	249.52	1393.87
184	122-60-1	Phenyl glycidyl ether	1.11	1	150.1	0.01	1444.48	13368.45
57	123-42-2	Diacetone alcohol	0.94	210	116.2	1	3591.74	28150.14
123	123-51-3	Isoamyl alcohol (primary)	0.81	1000	88.2	28	732.75	4948.66
49	123-73-9	Crotonaldehyde	0.87	40	70.1	19	50.26	364.60
23	123-86-4	n-Butyl acetate	0.88	1000	116.2	15	1140.24	8366.13
82	123-91-1	Dioxane	1.03	200	88.1	29	141.60	1216.06
122	123-92-2	Isoamyl acetate	0.87	300	130.2	4	1189.98	8631.91
216	126-73-8	Tributyl phosphate	0.98	12.5	266.3	127	0.97	7.96
47	126-99-8	beta-Chloroprene	0.96	40	88.5	188	4.36	34.86
208	127-18-4	Tetrachloroethylene	1.62	75	165.8	14	72.47	978.80
74	127-19-5	Dimethyl acetamide	0.94	40	87.1	2	413.75	3242.76
226	1300-73-8	Xylidine	0.98	15	121.2	1	249.52	2038.80
79	131-11-3	Dimethylphthalate	1.19	115	194.2	0.01	140144.26	1390496.15
48	1319-77-3	Cresol (all isomers)	1.03	25	108.2	1	448.20	3849.08
225	1330-20-7	Xylenes (o-,m- and p- isomers)	0.87	300	106.2	9	605.00	4388.59
160	13463-39-3	Nickel carbonyl	1.32	0.7	170.7	315	0.03	0.32
90	140-88-5	Ethyl acrylate	0.92	200	100.1	29	130.16	998.40
86	141-43-5	Ethanolamine	1.02	100	61.1	0.4	6535.44	55580.50
89	141-78-6	Ethyl acetate	0.9	1200	88.1	74	332.96	2498.49
134	141-79-7	Mesityl oxide	0.86	500	98.2	9	1061.83	7613.81
112	142-82-5	n-Heptane	0.68	1200	100.2	40	565.81	3207.95
99	151-56-4	Ethyleneimine	0.83	10	43.1	160	2.06	14.24
55	17702-41-9	Decaborane	0.94	0.17	122.2	0.05	56.25	440.87
176	19624-22-7	Pentaborane	0.62	0.3	63.1	200	0.04	0.20
174	20816-12-0	Osmium tetroxide	5.1	0.001	254.2	11	0.0009	0.04
71	2238-07-5	Diglycidyl ether	1.26	2.5	130.2	0.09	440.73	4630.14
29	2426-08-6	n-Butyl glycidyl ether	0.91	350	130.2	3	1851.08	14044.76
224	25013-15-4	Vinyl toluene	0.89	500	118.2	1	8455.99	62748.30
144	25639-42-3	Methylcyclohexanol	0.92	1000	114.2	2	8650.32	66354.09
39	2698-41-1	o-Chlorobenzylidene malononitrile	?	0.03	188.6	1	0.37	0.00
76	300-76-5	Dimethyl-1,2-dibromo-2,2(etc.)	1.96	11.4	380.8	0.0002	445386.30	7278475.48
118	302-01-2	Hydrazine	1.01	8	32.1	10	31.98	269.33
84	34590-94-8	Dipropylene glycol methylo ether	0.95	300	148.2	0.4	10925.05	86535.54
204	3689-24-5	TEDP	1.2	0.3	322.3	0.0002	13084.63	130915.23
132	4016-14-2	Isopropyl glycidyl ether	0.92	150	116.2	9	285.06	2186.60
106	50-00-0	Formaldehyde (gas)	1.08	3	30	760	0.17	1.49
107	50-00-0	Formaldehyde (aqueous solution)	1.1	3	30	1	125.41	1150.23
212	509-14-8	Tetranitromethane	1.62	3	196	8	4.54	61.35
124	528-75-4	Isoamyl alcohol (secondary)	0.82	1000	88.2	1	20516.95	140272.99
37	532-27-4	alpha-Chloroacetophenone	1.32	1.7	154.6	0.01	2408.20	26504.16
41	53469-21-9	Chlorodiphenyl (42% Cl)	1.39	0.1	258	0.001	1010.31	11708.88

Unit #	CAS Number	Name (Pure substances)	Density	Trigger Conc. (ppm)	Mole. Weight	Vapor Press. mmHg	Resultant Spill Vol. (gallons)	Resultant Spill Amt. (pounds)
161	54-11-5	Nicotine	1.01	0.5	162.2	0.08	85.78	722.33
64	540-59-0	1,2-Dichloroethylene	1.27	600	97	264	43.79	463.72
149	541-85-5	5-Methyl-3-heptanone	0.82	300	128.2	2	2404.40	16438.74
44	542-88-1	bis-Chloromethyl ether	1.32	0.003	115	30	0.0017	0.02
166	55-63-0	Nitroglycerine	1.6	5	227.1	0.0003	183175.51	2443626.92
111	556-52-5	Glycidol	1.12	75	74.1	0.9	1918.05	17911.26
35	55720-99-5	Chlorinated diphenyl oxide	1.6	0.12	376.9	6E-05	15734.13	209898.92
33	56-23-5	Carbon tetrachloride	1.59	30	153.8	91	4.69	62.12
175	56-38-2	Parathion	1.27	0.2	291.3	4E-05	46625.90	493717.46
78	57-14-7	1,1-Dimethylhydrazine	0.79	5	60.1	157	0.84	5.54
191	57-57-8	beta-Propiolactone	1.15	1.5	72.1	3	11.72	112.36
34	57-74-9	Chlordane	1.56	3	409.8	1E-05	2233293.19	29048107.28
203	5714-22-7	Sulfur pentafluoride	2.08	0.1	254.1	561	0.0018	0.03
145	583-60-8	o-Methylcyclohexanone	0.93	250	112.2	1	4375.89	33931.04
214	584-84-9	Toluene-2,4-diisosyanate	1.22	1	174.2	0.01	1309.27	13317.95
115	591-78-6	2-Hexanone	0.81	500	100.2	4	2357.54	15921.79
179	594-42-3	Perchloromethyl mercaptan	1.69	1	185.9	65	0.19	2.72
66	594-72-9	1,1-Dichloro-1-nitroethane	1.43	15	143.9	15	14.85	177.09
100	60-29-7	Ethyl ether	0.71	1900	74.1	440	99.39	588.37
150	60-34-4	Methyl hydrazine	0.87	5	46.1	50	3.15	22.84
45	600-25-9	1-Chloro-1-nitropropane	1.21	200	123.6	6	547.35	5522.06
14	62-53-3	Aniline and homolongs	1.02	10	93.1	0.6	329.96	2806.15
67	62-73-7	Dichlorvos	1.42	2.2	221	0.01	2461.76	29146.18
153	624-83-9	Methyl isocyanate	0.96	2	57.1	348	0.16	1.26
13	626-38-0	sec-Amyl acetate	0.87	900	130.2	7	2039.97	14797.55
197	627-13-4	n-Propyl nitrate	1.07	200	105.1	18	203.06	1811.56
12	628-63-7	n-Amyl acetate	0.88	400	130.2	5	1269.31	9313.20
98	628-96-6	Ethylene glycol dinitrate	1.49	8.2	152.1	0.05	2348.34	29173.89
108	64-18-6	Formic acid	1.22	15	46	35	13.51	137.45
2	64-19-7	Acetic Acid	1.05	100	60.1	11	240.25	2103.34
138	67-56-1	Methyl alcohol	0.79	2500	32.1	92	1086.38	7155.75
129	67-63-0	Isopropyl alcohol	0.79	1200	60.1	33	961.02	6330.04
4	67-64-1	Acetone	0.79	2250	58.1	180	337.81	2225.10
43	67-66-3	Chloroform	1.48	100	119.4	160	10.50	129.57
113	67-72-1	Hexachloroethane	2.09	30	236.7	0.2	1604.14	27953.50
77	68-12-2	Dimethylformamide	0.95	350	73.1	4	2032.10	16095.91
193	71-23-8	n-Propyl alcohol	0.81	600	60.1	21	755.09	5099.52
25	71-36-3	n-Butyl alcohol	0.81	800	74.1	6	3068.89	20725.89
17	71-43-2	Benzene	0.88	300	78.1	75	88.93	652.47
142	71-55-6	Methyl chloroform	1.34	1050	133.4	100	163.95	1831.73
151	74-88-4	Methyl Iodide	2.28	80	141.9	400	3.00	56.99
119	74-90-8	Hydrogen cyanide	0.69	5	27	630	0.36	2.05
92	74-96-4	Ethyl bromide	1.46	600	109	400	26.76	325.77
40	74-97-5	Chlorobromomethane	1.93	600	129.4	160	59.74	961.35
5	75-05-8	Acetonitrile	0.78	400	41.1	73	186.09	1210.22
1	75-07-0	Acetaldehyde	0.79	1000	44.1	740	43.81	288.56
102	75-08-1	Ethyl mercaptan	0.84	250	62.1	442	14.63	102.45
147	75-09-2	Methylene chloride	1.33	1500	84.9	350	90.17	999.92
32	75-15-0	Carbon disulfide	1.26	50	76.1	297	3.81	40.00
20	75-25-2	Bromoform	2.89	1.5	252.8	5	3.07	74.02
130	75-31-0	Isopropylamine	0.69	400	59.1	460	23.24	133.68
63	75-34-3	1,1-Dichloroethane	1.18	400	99	230	33.06	325.29
167	75-52-5	Nitromethane	1.14	300	61	28	280.39	2665.14
195	75-55-8	Propylene imine	0.8	50	57.1	112	12.20	81.40
196	75-56-9	Propylene oxide	0.83	200	58.1	445	12.15	84.05
70	75-61-6	Difluorodibromomethane	2.29	300	209.8	620	5.60	106.99
27	75-65-0	tert-Butyl alcohol	0.79	800	74.1	42	438.41	2887.73

Unit #	CAS Number	Name (Pure substances)	Density	Trigger Conc. (ppm)	Mole. Weight	Vapor Press. mmHg	Resultant Spill Vol. (gallons)	Resultant Spill Amt. (pounds)
105	75-69-4	Fluorotrichloromethane	1.47	3000	137.4	690	66.58	816.00
211	75-74-1	Tetramethyl lead	2	0.4	267.3	23	0.17	2.86
121	7553-56-2	Iodine	4.93	1	253.8	0.3	34.04	1399.36
40	76-06-2	Chloropicrin	1.66	4	164.4	20	2.72	37.65
206	76-12-0	1,1,2,2-Tetrachloro-1,2-difluoroethane	1.65	1500	203.8	40	442.67	6089.90
220	76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	1.56	3000	187.4	285	131.33	1708.22
187	7664-38-2	Phosphoric acid	1.87	246	98	0.03	156937.46	2446897.21
201	7664-93-9	Sulfuric acid	1.84	2	98.1	1	38.25	586.83
162	7697-37-2	Nitric acid	1.5	10	63	48	5.34	66.75
80	77-78-1	Dimethyl sulfate	1.33	1	126.1	0.1	162.05	1797.00
188	7719-12-2	Phosphorus trichloride	1.58	5	137.4	100	0.77	10.09
120	7722-84-1	Hydrogen peroxide	1.39	7.5	34	5	57.73	669.11
19	7726-95-6	Bromine	3.12	1	159.8	172	0.08	2.10
186	7786-34-7	Phosdrin	1.25	0.4	224.2	0.003	1477.89	15402.77
209	78-00-2	Tetraethyl lead	1.65	0.3	323.5	0.2	13.05	179.57
104	78-10-4	Ethyl silicate	0.93	100	208.3	1	1163.56	9022.31
222	78-30-8	Triorthocresyl phosphate	1.2	0.3	368.4	2E-05	119795.99	1198591.05
127	78-59-1	Isophorone	0.92	80	138.2	0.4	3050.82	23401.95
126	78-83-1	Isobutyl alcohol	0.8	800	74.1	9	2045.92	13646.68
194	78-87-5	Propylene dichloride	1.16	225	113	40	98.00	947.80
26	78-92-2	sec-Butyl alcohol	0.81	1000	74.1	24	959.03	6476.84
21	78-93-3	2-Butanone	0.81	600	72.1	71	198.05	1337.55
217	79-00-5	1,1,2-Trichloroethane	1.44	50	133.4	19	41.09	493.34
218	79-01-6	Trichloroethylene	1.46	150	131.4	58	40.79	496.49
135	79-20-9	Methyl acetate	0.93	1000	74.1	173	133.04	1031.64
164	79-24-3	Nitroethane	1.05	300	75.1	16	427.76	3744.88
6	79-27-6	Acetylene tetrabromide	2.97	3	345.7	0.02	1249.31	30936.81
207	79-34-5	1,1,2,2-Tetrachloroethane	1.59	15	167.9	9	22.36	296.40
169	79-46-9	2-Nitropropane	0.99	230	89.1	13	360.57	2976.25
154	80-62-6	Methyl methacrylate	0.94	400	100.1	40	188.73	1479.15
180	8002-05-9	Petroleum distillates	0.645	1200	99	40	570.33	3067.12
183	8004-13-5	Phenyl ether-biphenyl mixture	1.06	3	166	0.08	506.85	4479.56
223	8006-64-2	Turpentine	0.86	300	136	5	924.99	6632.60
158	8030-30-6	Naptha (coal tar)	0.93	1000	110	5	3546.77	27501.93
56	8065-48-3	Demeton	1.12	0.2	258.3	0.0003	6730.21	62848.39
60	84-74-2	Dibutylphthalate	1.05	80	278.3	0.01	76883.52	673085.21
189	85-44-9	Phthalic anhydride	1.53	167	148	1	2434.81	31060.23
170	88-72-2	ortho-Nitrotoluene	1.16	20	137.1	1	306.70	2966.28
190	88-89-1	Picric acid	1.76	1	229.1	1	10.93	160.35
15	90-04-0	o-Anisidine	1.1	1	123.2	0.1	164.56	1509.24
159	91-20-3	Naphthalene	1.15	50	128.2	0.08	10018.34	96059.70
83	92-52-4	Diphenyl	1.04	6	154.2	1	85.14	738.28
61	95-50-1	o-Dichlorobenzene	1.3	100	147	1	1464.51	15873.89
215	95-53-4	o-Toluidine	1.01	15	107.2	0.3	901.91	7595.08
58	96-12-8	1,2-Dibromo-3-chloropropane	2.05	0.003	236.4	0.8	0.04	0.69
219	96-18-4	1,2,3-Trichloropropane	1.39	100	147.4	10	146.19	1694.24
136	96-33-3	Methyl acrylate	0.96	100	86.1	65	32.07	256.70
110	98-00-0	Furfuryl alcohol	1.13	30	98.1	1	573.78	5405.90
109	98-01-1	Furfural	1.16	25	96.1	1	484.69	4687.81
31	98-51-1	p-tert-Butyltoluene	0.86	100	148.3	0.7	2080.04	14914.78
50	98-82-8	Cumene	0.86	800	120.2	5	2676.12	19188.94
155	98-83-9	alpha-Methyl styrene	0.91	500	118.2	2	4227.99	32079.19
163	98-95-3	Nitrobenzene	1.2	20	123.1	1	329.29	3294.66
171	99-08-1	meta-Nitrotoluene	1.16	20	137.1	1	306.70	2966.28
172	99-99-1	para-Nitrotoluene	1.12	20	137.1	1	306.70	2864.00

ATTACHMENT A

Hazardous Waste Codes Acceptable for the RCRA Exempt Wastewater Treatment Units

Hazardous Waste No.	Description of Hazardous Waste
A. Characteristically Hazardous Waste	
D001	Solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste (HNO3 (>40%)).
D002	Solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste.
D003	Solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste.
D004	Solid waste exhibiting the characteristic of TCLP toxicity for arsenic at 5.0 mg/l or more.
D005	Solid waste exhibiting the characteristic of TCLP toxicity for barium at 100 mg/l or more.
D006	Solid waste exhibiting the characteristic of TCLP toxicity for cadmium at 1.0 mg/l or more.
D007	Solid waste exhibiting the characteristic of TCLP toxicity for chromium at 5.0 mg/l or more.
D008	Solid waste exhibiting the characteristic of TCLP toxicity for lead at 5.0 mg/l or more.
D009	Solid waste exhibiting the characteristic of TCLP toxicity for mercury at 0.2 mg/l or more.
D010	Solid waste exhibiting the characteristic of TCLP toxicity for selenium at 1.0 mg/l or more.
D011	Solid waste exhibiting the characteristic of TCLP toxicity for silver at 5.0 mg/l or more.
D018	Solid waste exhibiting the characteristic of TCLP toxicity for benzene at 0.5 mg/l or more.
D019	Solid waste exhibiting the characteristic of TCLP toxicity for carbon tetrachloride at 0.5 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D021	Solid waste exhibiting the characteristic of TCLP toxicity for chlorobenzene at 100.0 mg/l or more.
D022	Solid waste exhibiting the characteristic of TCLP toxicity for chloroform at 6.0 mg/l or more.
D023	Solid waste exhibiting the characteristic of TCLP toxicity for o-cresol at 200.0 mg/l or more.
D024	Solid waste exhibiting the characteristic of TCLP toxicity for m-cresol at 200.0 mg/l or more.
D025	Solid waste exhibiting the characteristic of TCLP toxicity for p-cresol at 200.0 mg/l or more.
D026	Solid waste exhibiting the characteristic of TCLP toxicity for cresol at 200.0 mg/l or more.
D027	Solid waste exhibiting the characteristic of TCLP toxicity for 1,4 dichlorobenzene at 7.5 mg/l or more.
D028	Solid waste exhibiting the characteristic of TCLP toxicity for 1,2 dichloroethane at 0.5 mg/l or more.
D029	Solid waste exhibiting the characteristic of TCLP toxicity for 1,1 dichloroethylene at 0.7 mg/l or more.
D030	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4 dinitrotoluene at 0.13 mg/l or more.
D032	Solid waste exhibiting the characteristic of TCLP toxicity for hexachlorobenzene at 0.13 mg/l or more.
D033	Solid waste exhibiting the characteristic of TCLP toxicity for hexachlorobutadiene at 0.5 mg/l or more.
D034	Solid waste exhibiting the characteristic of TCLP toxicity for hexachloroethane at 3.0 mg/l or more.
D035	Solid waste exhibiting the characteristic of TCLP toxicity for methyl ethyl ketone at 200.0 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D003	Solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste.
D004	Solid waste exhibiting the characteristic of TCLP toxicity for arsenic at 5.0 mg/l or more.
D005	Solid waste exhibiting the characteristic of TCLP toxicity for barium at 100 mg/l or more.
D006	Solid waste exhibiting the characteristic of TCLP toxicity for cadmium at 1.0 mg/l or more.
D007	Solid waste exhibiting the characteristic of TCLP toxicity for chromium at 5.0 mg/l or more.
D008	Solid waste exhibiting the characteristic of TCLP toxicity for lead at 5.0 mg/l or more.
D009	Solid waste exhibiting the characteristic of TCLP toxicity for mercury at 0.2 mg/l or more.
D010	Solid waste exhibiting the characteristic of TCLP toxicity for selenium at 1.0 mg/l or more.
D011	Solid waste exhibiting the characteristic of TCLP toxicity for silver at 5.0 mg/l or more.
D018	Solid waste exhibiting the characteristic of TCLP toxicity for benzene at 0.5 mg/l or more.
D019	Solid waste exhibiting the characteristic of TCLP toxicity for carbon tetrachloride at 0.5 mg/l or more.
D021	Solid waste exhibiting the characteristic of TCLP toxicity for chlorobenzene at 100.0 mg/l or more.
D022	Solid waste exhibiting the characteristic of TCLP toxicity for chloroform at 6.0 mg/l or more.
D023	Solid waste exhibiting the characteristic of TCLP toxicity for o-cresol at 200.0 mg/l or more.
D024	Solid waste exhibiting the characteristic of TCLP toxicity for m-cresol at 200.0 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D025	Solid waste exhibiting the characteristic of TCLP toxicity for p-cresol at 200.0 mg/l or more.
D026	Solid waste exhibiting the characteristic of TCLP toxicity for cresol at 200.0 mg/l or more.
D027	Solid waste exhibiting the characteristic of TCLP toxicity for 1,4 dichlorobenzene at 7.5 mg/l or more.
D028	Solid waste exhibiting the characteristic of TCLP toxicity for 1,2 dichloroethane at 0.5 mg/l or more.
D029	Solid waste exhibiting the characteristic of TCLP toxicity for 1,1 dichloroethylene at 0.7 mg/l or more.
D030	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4 dinitrotoluene at 0.13 mg/l or more.
D032	Solid waste exhibiting the characteristic of TCLP toxicity for hexachlorobenzene at 0.13 mg/l or more.
D033	Solid waste exhibiting the characteristic of TCLP toxicity for hexachlorobutadiene at 0.5 mg/l or more.
D034	Solid waste exhibiting the characteristic of TCLP toxicity for hexachloroethane at 3.0 mg/l or more.
D035	Solid waste exhibiting the characteristic of TCLP toxicity for methyl ethyl ketone at 200.0 mg/l or more.
D036	Solid waste exhibiting the characteristic of TCLP toxicity for nitrobenzene at 2.0 mg/l or more.
D037	Solid waste exhibiting the characteristic of TCLP toxicity for pentachlorophenol at 100 mg/l or more.
D038	Solid waste exhibiting the characteristic of TCLP toxicity for pyridine at 5.0 mg/l or more.
D039	Solid waste exhibiting the characteristic of TCLP toxicity for tetrachloroethylene at 0.7 mg/l or more.
D040	Solid waste exhibiting the characteristic of TCLP toxicity for trichloroethylene at 0.5 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D041	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4,5 trichlorophenol at 400.0 mg/l or more.
D042	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4,6 trichlorophenol at 2.0 mg/l or more.
D043	Solid waste exhibiting the characteristic of TCLP toxicity for vinyl chloride at 0.2 mg/l or more.

B. Hazardous Wastes From Non-Specific Sources

F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons, spent solvent mixtures/blends used in degreasing, and still bottom from the recovery of these spent solvents and spent solvent mixtures.
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, trichlorofluoromethane, 1,1,2-trichloroethane, spent solvent mixtures and blends, and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F003	The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-buryl alcohol, cyclohexanone, methanol, spent solvent mixtures and blends, and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F004	The following spent non-halogenated solvents: cresols and cresylic acid, nitrobenzene, spent solvent mixtures and blends, and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F005	The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, 2-nitropropane, spent solvent mixtures and blends, and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F006	Wastewater treatment sludges from electroplating operations.

Hazardous Waste No.	Description of Hazardous Waste
F007	Spent cyanide plating baths from electroplating operations.
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum except from zirconium phosphating in aluminum can washing when such phosphating is an exclusive.
F039	Multi-Source leachate.

C. Hazardous Wastes From Specific Sources

K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments.
K003	Wastewater treatment sludge from the production of molybdate orange pigments.
K004	Wastewater treatment sludge from the production of zinc yellow pigments.
K005	Wastewater treatment sludge from the production of chrome green pigments.
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).
K007	Wastewater treatment sludge from the production of iron blue pigments.
K008	Oven residue from the production of chrome oxide green pigments.

Hazardous Waste No.	Description of Hazardous Waste
K046	Wastewater treatment sludges from the manufacturing, formulation and loading of lead based initiating compounds.
K048	Dissolved air flotation (DAF) float from the petroleum refining industry.
K052	Tank bottoms (leaded) from the petroleum refining industry.
K060	Ammonia still lime sludge from coking operations.
K061	Emission control dust/sludge from the primary production of steel in electric furnaces.
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332) (as defined in 35 Ill. Adm. Code 720.110).
K069	Emission control dust/sludge from secondary lead smelting.
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps and stabilizers containing chromium and lead.
K087	Decanter tank tar sludge from coking operations.
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.

Hazardous Waste Codes Acceptable for Stabilization/Fixation

Hazardous Waste No.	Description of Hazardous Waste
A. Characteristically Hazardous Waste	
D004	Solid waste exhibiting the characteristic of TCLP toxicity for arsenic at 5.0 mg/l or more.
D005	Solid waste exhibiting the characteristic of TCLP toxicity for barium at 100 mg/l or more.
D006	Solid waste exhibiting the characteristic of TCLP toxicity for cadmium at 1.0 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D007	Solid waste exhibiting the characteristic of TCLP toxicity for chromium at 5.0 mg/l or more.
D008	Solid waste exhibiting the characteristic of TCLP toxicity for lead at 5.0 mg/l or more.
D009	Solid waste exhibiting the characteristic of TCLP toxicity for mercury at 0.2 mg/l or more.
D010	Solid waste exhibiting the characteristic of TCLP toxicity for selenium at 1.0 mg/l or more.
D011	Solid waste exhibiting the characteristic of TCLP toxicity for silver at 5.0 mg/l or more.

B. Hazardous Waste From Specific Sources

K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332) (as defined in 35 Ill. Adm. Code 720.110).

C. Hazardous Waste From Non-Specific Sources

F006(1)	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.
F007(1)	Spent cyanide plating bath solutions from electroplating operations.
F008(1)	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.
F009(1)	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.
F010(1)	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.

Hazardous Waste No.	Description of Hazardous Waste
F011(1)	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.
F012(1)	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.
F019(1)	Wastewater treatment sludges from the chemical conversion coating of aluminum.

(1) The facility cannot stabilize wastes containing parameters above land ban restrictions whose BDAT as identified in the Federal Register is not based on stabilization (i.e., cyanide).

Hazardous Waste Codes Acceptable for Fuel Blending

Hazardous Waste No.	Description of Hazardous Waste
A.	Characteristically Hazardous Waste
D001	Solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste.
D002	Solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste.
D003	Solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste.
D004	Solid waste exhibiting the characteristic of TCLP toxicity for arsenic at 5.0 mg/l or more.
D005	Solid waste exhibiting the characteristic of TCLP toxicity for barium at 100 mg/l or more.
D006	Solid waste exhibiting the characteristic of TCLP toxicity for cadmium at 1.0 mg/l or more.
D007	Solid waste exhibiting the characteristic of TCLP toxicity for chromium at 5.0 mg/l or more.
D008	Solid waste exhibiting the characteristic of TCLP toxicity for lead at 5.0 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D009	Solid waste exhibiting the characteristic of TCLP toxicity for mercury at 0.2 mg/l or more.
D010	Solid waste exhibiting the characteristic of TCLP toxicity for selenium at 1.0 mg/l or more.
D011	Solid waste exhibiting the characteristic of TCLP toxicity for silver at 5.0 mg/l or more.
D018	Solid waste exhibiting the characteristic of TCLP toxicity for benzene at 0.5 mg/l or more.
D019	Solid waste exhibiting the characteristic of TCLP toxicity for carbon tetrachloride at 0.5 mg/l or more.
D021	Solid waste exhibiting the characteristic of TCLP toxicity for chlorobenzene at 100.0 mg/l or more.
D022	Solid waste exhibiting the characteristic of TCLP toxicity for chloroform at 6.0 mg/l or more.
D023	Solid waste exhibiting the characteristic of TCLP toxicity for o-cresol at 200.0 mg/l or more.
D024	Solid waste exhibiting the characteristic of TCLP toxicity for m-cresol at 200.0 mg/l or more.
D025	Solid waste exhibiting the characteristic of TCLP toxicity for p-cresol at 200.0 mg/l or more.
D026	Solid waste exhibiting the characteristic of TCLP toxicity for cresol at 200.0 mg/l or more.
D027	Solid waste exhibiting the characteristic of TCLP toxicity for 1,4 dichlorobenzene at 7.5 mg/l or more.
D028	Solid waste exhibiting the characteristic of TCLP toxicity for 1,2 dichloroethane at 0.5 mg/l or more.
D029	Solid waste exhibiting the characteristic of TCLP toxicity for 1,1 dichloroethylene at 0.7 mg/l or more.
D030	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4 dinitrotoluene at 0.13 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D032	Solid waste exhibiting the characteristic of TCLP toxicity for hexachlorobenzene at 0.13 mg/l or more.
D033	Solid waste exhibiting the characteristic of TCLP toxicity for hexachlorobutadiene at 0.5 mg/l or more.
D034	Solid waste exhibiting the characteristic of TCLP toxicity for hexachloroethane at 3.0 mg/l or more.
D035	Solid waste exhibiting the characteristic of TCLP toxicity for methyl ethyl ketone at 200.0 mg/l or more.
D036	Solid waste exhibiting the characteristic of TCLP toxicity for nitrobenzene at 2.0 mg/l or more.
D037	Solid waste exhibiting the characteristic of TCLP toxicity for pentachlorophenol at 100.0 mg/l or more.
D038	Solid waste exhibiting the characteristic of TCLP toxicity for pyridine at 5.0 mg/l or more.
D039	Solid waste exhibiting the characteristic of TCLP toxicity for tetrachloroethylene at 0.7 mg/l or more.
D040	Solid waste exhibiting the characteristic of TCLP toxicity for trichloroethylene at 0.5 mg/l or more.
D041	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4,5 trichlorophenol at 400.0 mg/l or more.
D042	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4,6 trichlorophenol at 2.0 mg/l or more.
D043	Solid waste exhibiting the characteristic of TCLP toxicity for vinyl chloride at 0.2 mg/l or more.

B. Hazardous Wastes From Non-Specific Sources

F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, chlorinated fluorocarbons, spent solvent mixtures/blends used in degreasing, and still bottom from the recovery of these spent solvents and spent solvent mixtures.

Hazardous Waste No.	Description of Hazardous Waste
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, trichlorofluoromethane, 1,1,2-trichloroethane, spent solvent mixtures and blends, and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F003	The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-buryl alcohol, cyclohexanone, methanol, spent solvent mixtures and blends, and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F004	The following spent non-halogenated solvents: cresols and cresylic acid, nitrobenzene, spent solvent mixtures and blends, and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F005	The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol, 2-nitropropane, spent solvent mixtures and blends, and the still bottoms from the recovery of these spent solvents and spent solvent mixtures.

C. Hazardous Wastes from Specific Sources

K001	Bottom sediment sludge from the treatment of wastewater from wood preserving processes that use creosote and/or pentachlorophenol.
K009	Distillation bottoms from the production of acetaldehyde from ethylene.
K010	Distillation side cuts from the production of acetaldehyde from ethylene.
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile.
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile.
K014	Bottoms from the acetonitrile purification column in the production of acrylonitrile.

Hazardous Waste No.	Description of Hazardous Waste
K019	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production.
K022	Distillation bottom tars from the production of phenol/acetone from cumene.
K023	Distillation light ends from the production of phthalic anhydride from naphthalene.
K024	Distillation bottoms from the production of phthalic anhydride from naphthalene.
K028	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane.
K029	Waste from the product stream stripper in the production of 1,1,1-trichloroethane.
K048	Dissolved air flotation (DAF) float from the petroleum refining industry.
K049	Slop oil emulsion solids from the petroleum refining industry.
K050	Heat exchanger bundle cleaning sludge from the petroleum refining industry.
K051	API separator sludge from the petroleum refining industry.
K052	Tank bottoms (leaded) from the petroleum refining industry.
K083	Distillation bottoms from aniline production.
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes.
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps and stabilizers containing chromium and lead.
K087	Decanter tank tar sludge from coking operations.
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene.

Hazardous Waste No.	Description of Hazardous Waste
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene.
K095	Distillation bottoms from the production of 1,1,1-trichloroethane.
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.

Hazardous Waste No.	Description of Hazardous Waste
Commercial Chemical Products	
U001	Acetaldehyde
U003	Acetonitrile
U004	Acetophenone
U007	Acrylamide
U017	Benzyl Chloride
U019	Benzene
U025	Dichloroethyl ether
U030	4-Bromophenyl phenyl ether
U034	Chloral
U037	Chlorobenzene
U039	p-Chloro-m-cresol
U044	Chloroform
U045	Chloromethane, (Methyl Chloride)
U046	Chloromethyl methyl ether
U048	O-Chlorophenol
U051	Creosote
U052	Cresol (Cresylic acid)
U055	Cumene
U056	Cyclohexane
U057	Cyclohexanone
U069	Dibutyl phthalate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U074	1,4-Dichloro-2-butene
U075	Dichlorodifluromethane
U076	Ethane, 1,1-Dichloro-
U077	Ethylene Dichloride
U078	1,1-Dichloroethylene

Hazardous Waste No.	Description of Hazardous Waste
U080	Methane, Dichloro-
U081	2,4-Dichlorophenol
U082	2,6-Dichlorophenol
U083	Propane, 1,1-Dichloro
U089	Diethylstilbestrol
U090	Dihydrosafrole
U092	Dimethylamine (I)
U101	2,4-Dimethylphenol
U112	Ethyl acetate (I)
U113	Ethyl acrylate (I)
U117	Ethyl ether
U118	Ethyl methacrylate
U120	Fluoranthene
U121	Trichlorofluoromethane
U122	Formaldehyde
U123	Formic acid
U124	Furan
U125	Furfural (I)
U130	Hexachlorocyclopentadiene
U132	Hexachlorophene
U140	Isobutyl alcohol
U153	Methanethiol
U154	Methanol
U159	Methyl ethyl ketone (MEK)
U161	Methyl isobutyl ketone
U162	Methyl methacrylate
U163	N-Methyl-N'-Nitro-N-Nitroso-Guanidine
U165	Naphthalene
U166	1,4-Naphthoquinone
U169	Nitrobenzene (I,T)
U170	p-Nitrophenol
U172	N-Nitrosodi-n-butylamine
U173	N-Nitrosodiethanolamine
U183	Pentachlorobenzene
U184	Pentachloroethane
U186	1,3-Pentadiene
U187	Phenacetin
U190	Phthalic anhydride
U191	2-Picoline
U197	p-Benzoquinone
U203	Safrole
U208	1,1,1,2-Tetrachloroethane
U209	1,1,2,2-Tetrachloroethane
U210	Tetrachloroethylene

Hazardous Waste No.	Description of Hazardous Waste
U211	Carbon Tetrachloride
U213	Tetrahydrofuran
U220	Toluene
U223	Toluene diisocyanate
U226	1,1,1-Trichloroethane
U227	1,1,2-Trichloroethane
U228	Trichloroethylene
U239	Xylene

Hazardous Waste Codes Acceptable for Storage and Transfer

Hazardous Waste No.	Description of Hazardous Waste
A.	Characteristically Hazardous Waste
D001	Solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste.
D002	Solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste.
D003	Solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste.
D004	Solid waste exhibiting the characteristic of TCLP toxicity for arsenic at 5.0 mg/l or more.
D005	Solid waste exhibiting the characteristic of TCLP toxicity for barium at 100 mg/l or more.
D006	Solid waste exhibiting the characteristic of TCLP toxicity for cadmium at 1.0 mg/l or more.
D007	Solid waste exhibiting the characteristic of TCLP toxicity for chromium at 5.0 mg/l or more.
D008	Solid waste exhibiting the characteristic of TCLP toxicity for lead at 5.0 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D009	Solid waste exhibiting the characteristic of TCLP toxicity for mercury at 0.2 mg/l or more.
D010	Solid waste exhibiting the characteristic of TCLP toxicity for selenium at 1.0 mg/l or more.
D011	Solid waste exhibiting the characteristic of TCLP toxicity for silver at 5.0 mg/l or more.
D012	Solid waste exhibiting the characteristic of TCLP Toxicity for Endrin at 0.02 mg/l or more.
D013	Solid Waste exhibiting the characteristic of TCLP Toxicity for Lindane at 0.4 mg/l or more.
D014	Solid Waste exhibiting the characteristic of TCLP Toxicity for Methoxychlor at 10.0 mg/l or more.
D015	Solid waste exhibiting the characteristic of TCLP Toxicity for Toxaphene at 0.5 mg/l or more.
D016	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4-D at 10.0 mg/l or more.
D017	Solid waste exhibiting the characteristic of TCLP Toxicity for 2,4,5-TP (Silvex) at 1.0 mg/l or more.
D018	Solid waste exhibiting the characteristic of TCLP toxicity for benzene at 0.5 mg/l or more.
D019	Solid waste exhibiting the characteristic of TCLP toxicity for carbon tetrachloride at 0.5 mg/l or more.
D020	Solid waste exhibiting the characteristic of TCLP Toxicity for chlordane at 0.03 mg/l or more.
D021	Solid waste exhibiting the characteristic of TCLP toxicity for chlorobenzene at 100.0 mg/l or more.
D022	Solid waste exhibiting the characteristic of TCLP toxicity for chloroform at 6.0 mg/l or more.
D023	Solid waste exhibiting the characteristic of TCLP toxicity for o-cresol at 200.0 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D024	Solid waste exhibiting the characteristic of TCLP toxicity for m-cresol at 200.0 mg/l or more.
D025	Solid waste exhibiting the characteristic of TCLP toxicity for p-cresol at 200.0 mg/l or more.
D026	Solid waste exhibiting the characteristic of TCLP toxicity for cresol at 200.0 mg/l or more.
D027	Solid waste exhibiting the characteristic of TCLP toxicity for 1,4 dichlorobenzene at 7.5 mg/l or more.
D028	Solid waste exhibiting the characteristic of TCLP toxicity for 1,2 dichloroethane at 0.5 mg/l or more.
D029	Solid waste exhibiting the characteristic of TCLP toxicity for 1,1 dichloroethylene at 0.7 mg/l or more.
D030	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4 dinitrotoluene at 0.13 mg/l or more.
D031	Solid waste exhibiting the characteristic of TCLP Toxicity for heptachlor (and its epoxide) at 0.008 mg/l or more.
D032	Solid waste exhibiting the characteristic of TCLP toxicity for hexachlorobenzene at 0.13 mg/l or more.
D033	Solid waste exhibiting the characteristic of TCLP toxicity for hexachlorobutadiene at 0.5 mg/l or more.
D034	Solid waste exhibiting the characteristic of TCLP toxicity for hexachloroethane at 3.0 mg/l or more.
D035	Solid waste exhibiting the characteristic of TCLP toxicity for methyl ethyl ketone at 200.0 mg/l or more.
D036	Solid waste exhibiting the characteristic of TCLP toxicity for nitrobenzene at 2.0 mg/l or more.
D037	Solid waste exhibiting the characteristic of TCLP toxicity for pentachlorophenol at 100.0 mg/l or more.
D038	Solid waste exhibiting the characteristic of TCLP toxicity for pyridine at 5.0 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
D039	Solid waste exhibiting the characteristic of TCLP toxicity for tetrachloroethylene at 0.7 mg/l or more.
D040	Solid waste exhibiting the characteristic of TCLP toxicity for trichloroethylene at 0.5 mg/l or more.
D041	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4,5 trichlorophenol at 400.0 mg/l or more.
D042	Solid waste exhibiting the characteristic of TCLP toxicity for 2,4,6 trichlorophenol at 2.0 mg/l or more.
D043	Solid waste exhibiting the characteristic of TCLP toxicity for vinyl chloride at 0.2 mg/l or more.

Hazardous Waste No.	Description of Hazardous Waste
B.	Hazardous Wastes From Non-Specific Sources
F001	The following spent halogenated solvents used in degreasing tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; all spent solvent mixtures and blends used in degreasing containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F002, F004 or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, orthodichlorobenzene, trichlorofluoromethane; and 1,1,2-trichloroethane; all spent solvent mixtures and blends containing, before use, a total of ten percent or more (by volume) of one or more of the above halogenated solvents or those solvents listed in F001, F004, or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.

Hazardous Waste No.	Description of Hazardous Waste
F003	The following spent non-halogenated solvents: xylene, acetone, ethylacetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; all spent solvent mixtures and blends containing, before use, only the above spent non-halogenated solvents; and all spent solvent mixtures and blends containing, before use, one or more of the above non-halogenated solvents and a total of ten percent or more (by volume) of one or more of those solvents listed in F001, F002, F004 or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F004	The following spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; all spent solvent mixtures and blends containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002 or F005; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F005	The following spent non-halogenated solvents: toluene, methyl ethylketone, carbon disulfide, isobutanol, pyridine, benzene, 2-ethoxyethanol and 2-nitropropane; all spent solvent mixtures and blends, containing, before use, a total of ten percent or more (by volume) of one or more of the above non-halogenated solvents or those solvents listed in F001, F002 or F004; and still bottoms from the recovery of these spent solvents and spent solvent mixtures.
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.
F007	Spent cyanide plating bath solutions from electroplating operations.
F008	Plating bath residues from the bottom of plating baths from electroplating operations where cyanides are used in the process.
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.
F010	Quenching bath residues from oil baths from metal heat treating operations where cyanides are used in the process.

Hazardous Waste No.	Description of Hazardous Waste
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations.
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process.
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum.
F020	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tri-, or tetrachlorphenol, or of intermediates used to produce their pesticide derivatives. (This listing does not include wastes from the production of Hexachlorophene from highly purified 2, 4, 5-trichlorophenol.)
F021	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production or manufacturing use (as a reactant, chemical intermediate or component in a formulating process) of pentachlorophenol, or of intermediates used to produce its derivatives.
F022	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the manufacturing use (as a reactant, chemical intermediate, or component in a formulating process) of tetra-, penta-, or hexachlorobenzenes under alkaline conditions.
F023	Wastes (except wastewater and spent carbon from hydrogen chloride purification) from the production of materials on equipment previously used for the production or manufacturing use (as a reactant, chemical intermediate or component in a formulating process) of tri- and tetrachlorophenols. (This listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol.)
F024	Process wastes including but not limited to, distillation residues, heavy ends, tars, and reactor cleanout wastes, from the production of certain chlorinated aliphatic hydrocarbons by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five with varying amounts and positions of chlorine substitution. (This listing does not include wastewaters, wastewater treatment sludges, spent catalysis and wastes listed in this Section 721.132.)

Hazardous Waste No.	Description of Hazardous Waste
F037	Petroleum refinery primary oil/water/solids separation sludge -- Any sludge generated from the gravitational separation of oil/water/solids during the storage or treatment of process wastewaters and oil cooling wastewaters from petroleum refineries. Such sludges include, but are not limited to, those generated in: oil/water/solids separators; tanks and impoundments; ditches and other conveyances; sumps; and stormwater units receiving dry weather flow. Sludges generated in stormwater units that doe not receive dry weather flow, sludges generated in aggressive biological treatment units as defined in subsection (b)(2) (including sludges generated in one or more additional units after wastewaters have been treated in aggressive biological treatment units) and K051 wastes are not included in this listing.
F038	Petroleum refinery secondary (emulsified) oil/water/solids separation sludge -- Any sludge or float generated from the physical or chemical separation of oil/water/solids in process wastewaters and oily cooling wastewaters from the physical or chemical separation of oil/water/solids in process wastewaters and oil cooling wastewaters from petroleum refineries. Such wastes include, but are not limited to, all sludges and floats generated in: induced air flotation (IAF) units, tanks and impoundments, and all sludges generated in DAF units. Sludges generated in stormwater units that do not receive dry weather flow, sludges generated in aggressive biological treatment units as defined in Subsection (b)(2) (including sludges generated in one or more additional units after wastewaters have ben treated in aggressive biological treatment units), F037, K048 and K051 wastes are not included in this listing.
F039	Leachate resulting from the treatment, storage or disposal of wastes classified by more than one waste code under Subpart D, or from a mixture of wastes classified under Subparts C and D. (Leachate resulting from the management of one or more of the following USEPA hazardous wastes and no other hazardous wastes retains its hazardous waste code(s): F020, F021, F022, F023, F026, F027 or F028.)

Hazardous Waste No.	Description of Hazardous Waste
C.	Hazardous Wastes From Specific Sources
K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.

Hazardous Waste No.	Description of Hazardous Waste
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments.
K003	Wastewater treatment sludge from the production of molybdate orange pigments.
K004	Wastewater treatment sludge from the production of zinc yellow pigments.
K005	Wastewater treatment sludge from the production of chrome green pigments.
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).
K007	Wastewater treatment sludge from the production of iron blue pigments.
K008	Oven residue from the production of chrome oxide green pigments.
K009	Distillation bottoms from the production of acetaldehyde from ethylene.
K010	Distillation side cuts from the production of acetaldehyde from ethylene.
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile.
K013	Bottom stream from the acetronitrile column in the production of acylonitrile.
K014	Bottoms from the acetontrile purification column in the production of acrylonitrile.
K015	Still bottoms from the distillation of benzyl chloride.
K016	Heavy ends or distillation residues from the production or carbon tetrachloride.
K017	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.
K018	Heavy ends from the fractionation column in ethyl chloride production.

Hazardous Waste No.	Description of Hazardous Waste
K061	Emission control dust/sludge from the primary production of steel in electric furnaces.
K062	Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332) (as defined in 35 Ill. Adm. Code 720.110).
K064	Acid plant blowdown slurry or sludge resulting from the thickening of blowdown slurry from primary copper production.
K065	Surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities.
K066	Sludge from treatment of process wastewater or acid plant blowdown from primary zinc production.
K069	Emission control dust/sludge from secondary lead smelting.
K071	Brine purification muds from the mercury cell process in chlorine production, where separately pre-purified brine is not used.
K073	Chlorinated hydrocarbon waste from the purification step of the diaphram cell process using graphite anodes in chlorine production.
K083	Distillation bottoms from aniline production.
K084	Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.
K085	Distillation or fractionation column bottoms from the production of chlorobenzenes.
K086	Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps and stabilizers containing chromium and lead.
K087	Decanter tank tar sludge from coking operations.
K088	Spent potliners from primary aluminum reduction.
K090	Emission control dust or sludge from ferrochromiumsilicon production.

Hazardous Waste No.	Description of Hazardous Waste
K091	Emission control dust or sludge from ferrochromium production.
K093	Distillation light ends from the production of phthalic anhydride from ortho-xylene.
K094	Distillation bottoms from the production of phthalic anhydride from ortho-xylene.
K095	Distillation bottoms from the production of 1,1,1-trichloroethane.
K096	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane.
K097	Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane.
K098	Untreated process wastewater from the production of toxaphene.
K099	Untreated wastewater from the production of 2,4-D.
K100	Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.
K101	Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.
K102	Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic compounds.
K103	Process residues from aniline extraction from the production of aniline.
K104	Combined wastewater streams generated from nitrobenzene/aniline production.
K105	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes.
K106	Wastewater treatment sludge from the mercury cell process in chlorine production.
K107	Column bottoms from product separation from the production of 1,1-dimethylhydrazine (UDMH) from carboxylic acid hydrazines.

Hazardous Waste No.	Description of Hazardous Waste
K108	Condensed column overheads from product separation and condensed reactor vent gases from the production of 1,1-dimethylhydrazine (UMDH) from carboxylic acid hydrazines.
K109	Spent filter cartridges from product purification from the production of 1,1-dimethylhydrazine (UMDH) from carboxylic acid hydrazines.
K110	Condensed column overheads from intermediate separation from the production of 1,1-dimethylhydrazine (UMDH) from carboxylic acid hydrazines.
K111	Product washwaters from the production of dinitrotoluene via nitration of toluene.
K112	Reaction by-product water from the drying column in the production of toluenediamine via hydrogenation of dinitrotoluene.
K113	Condensed liquid light ends from the (T) purification of toluenediamine in the production of toluenediamine via hydrogenation dinitrotoluene.
K114	Vicinals from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.
K115	Heavy ends from the purification of toluenediamine in the production of toluenediamine via hydrogenation of dinitrotoluene.
K116	Organic condensate from the solvent recovery column in the production of toluene diisocyanate via phosgenation of toluenediamine.
K117	Wastewater from the reactor vent gas scrubber in the production of ethylene dibromide via bromination of ethene.
K118	Spent absorbent solids from purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.
K123	Process wastewater (including supernates, filtrates, and wash waters) from the production of ethylenebisdithiocarbamic acid and its salts.
K124	Reactor vent scrubber water from the production of ethylene-bisdithiobarbamic acid and its salts.

Hazardous Waste No.	Description of Hazardous Waste
K125	Filtration, evaporation, and centrifugation of solids from the production of ethylenebisdithio carbonic acid and its salts.
K126	Baghouse dust and floor sweepings in milling and packaging operations from production or formulation of ethylenebisdithiocarbamic acid and its salts.
K131	Wastewater from the reactor and spent sulfuric acid from the acid dryer from the production of methyl bromide.
K132	Spent absorbent and wastewater separator solids form the production of methyl bromide.
K136	Still bottoms from the purification of ethylene dibromide in the production of ethylene dibromide via bromination of ethene.
K141	Process residues from the recovery of coal tar, including, but not listed to, tar collecting sump residues from the production of coke from coal or the recovery of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludge from coking operations).
K142	Tar storage tank residues from the production of coke from coal or from the recovery of coke by-products produced from coal. This listing does not include K087 (decanter tank tar sludge from coking operations).
K143	Process residues from the recovery of light oil, including, but not limited to, those generated in stills, decanters, and wash oil recovery units from the recovery of coke by-products produced from coal.
K144	Wastewater treatment sludges from light oil refining, including, but not limited to, intercepting or contamination sump sludges from the recovery of coke by-products produced from coal.
K145	Residues from napthalene collection and recovery operations from the recovery of coke by-products produced from coal.
K147	Tar storage tank residues from coal tar refining.
K148	Residues from coal tar distillation, including, but not limited to, still bottoms.

Hazardous Waste No.	Description of Hazardous Waste
K149	Distillation bottoms from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups. [This waste does not include still bottoms from the distillation of benzyl chloride.]
K150	Organic residuals, excluding spent carbon adsorbent, from the spent chlorine gas and hydrochloric acid recovery processes associated with the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups.
K151	Wastewater treatment sludges, excluding neutralization and biological sludges, generated during the treatment of wastewaters from the production of alpha- (or methyl-) chlorinated toluenes, ring-chlorinated toluenes, benzoyl chlorides, and compounds with mixtures of these functional groups.

D. Discarded Commercial Chemical Products, Off-Specification Species, Container Residues, and Spill Residues Thereof:

Hazardous Waste No.	Description of Hazardous Waste
P001	Warfarin, when present at concentrations greater than 0.3%.
P002	1-Acetyl-2-thiourea
P003	Acrolein
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide
P007	5-(Aminomethyl)-3-isoxazolol
P008	4-Aminopyridine
P009	Ammonium picrate
P010	Arsenic acid
P011	Arsenic pentoxide
P012	Arsenic trioxide
P013	Barium cyanide
P014	Benzenethiol
P015	Beryllium dust
P016	Bis-chloromethyl) ether
P017	Bromoacetone
P018	Brucine
P020	Dinoseb
P021	Calcium cyanide

Hazardous Waste No.	Description of Hazardous Waste
P022	Carbon bisulfide
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl) thiourea
P027	3-Chloropropionitrile
P028	Benzyl chloride
P029	Copper cyanides
P030	Cyanides (soluble cyanide salts) not elsewhere specified.
P031	Cyanogen
P033	Cyanogen chloride
P034	4,6-Dinitro-o-cyclohexylphenol
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P039	Disulfoton
P040	0,0-Diethyl O-pyrazinyl phosphoro-thioate
P041	Diethyl-p-nitrophenyl phosphate
P042	Epinephrine
P043	Diisopropyl fluorophosphate
P044	Dimethoate
P045	Thiofanox
P046	Ethanamine, 1,10dimethyl-2-phenyl-
P047	4,6-Dinitro-o-cresol and salts
P048	2,4-Dinitrophenol
P049	2,4-Dithiobiuret
P050	Endosulfan
P051	Endrin
P054	Ethylenimine
P056	Fluorine
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P059	Heptachlor
P060	Hexachlorohexahydro-endo, endo-dimethanonaphthalene
P062	Hexaethyl tetraphosphate
P063	Hydrogen cyanide
P064	Methyl Isocyanate
P065	Mercury fulminate
P066	Methomyl
P067	2-Methylaziridine
P068	Methyl hydrazine
P069	2-Methyllactonitrile
P070	Aldicarb
P071	Methyl parathion
P072	alpha-Naphthylthiourea

Hazardous Waste No.	Description of Hazardous Waste
P073	Nickel carbonyl
P074	Nickel cyanide
P075	Nicotine and salts
P076	Nitric oxide
P077	p-Nitroaniline
P078	Nitrogen dioxide
P081	Nitroglycerine
P082	N-Nitrosodimethylamine
P084	N-Nitrosomethylvinylamine
P085	Octamethylpyrophosphoramide
P087	Osmium oxide
P088	Endothall
P089	Parathion
P092	Phenylmercuric acetate
P093	N-Phenylthiourea
P094	Phorate
P095	Phosgene
P096	Phosphine
P097	Pamphur
P098	Potassium cyanide
P099	Potassium silver cyanide
P101	Propanenitrile
P102	Propargyl alcohol
P103	Selenourea
P104	Silver cyanide
P105	Sodium azide
P106	Sodium cyanide
P108	Strychnine and salts
P109	Tetraethyldithiopyrophosphate
P110	Tetraethyl lead
P111	Tetraethylpyrophosphate
P112	Tetranitromethane
P113	Thallic oxide
P114	Thallium(1) selenide
P115	Thallium(1) sulfate
P116	Thiosemicarbazide
P118	Trichloromethanethiol
P119	Vanadic acid, ammonium salt
P120	Vanadium pentoxide
P121	Zinc cyanide
P122	Zinc phosphide
P123	Toxaphene

E. Commercial Chemical Products, Manufacturing Chemical Intermediates, or Off-Specification Commercial Chemical Products:

Hazardous Waste No.	Description of Hazardous Waste
U001	Acetaldehyde
U002	Acetone
U003	Acetonitrile
U004	Acetophenone
U005	2-Acetylaminofluorene
U006	Acetyl chloride
U007	Acrylamide
U008	Acrylic acid
U009	Acrylonitrile
U010	Mitomycin C
U011	Amitrole
U012	Aniline
U014	Auramine
U015	Azaserine
U016	Benz(c)acridine
U017	Benzal chloride
U018	Benz(a)anthracene
U019	Benzene
U020	Benzenesulfonyl chloride
U021	Benzidine
U022	Benzo(a)pyrene
U023	Benzotrichloride
U024	Bis(2-chloroethyoxy) methane
U025	Dichloroethyl ether
U026	Chloronaphazine
U027	Bis(2-chloroisopropyl) ether
U028	Bis(2-ethylhexyl) phthalate
U029	Bethyl bromide
U030	Benzene, 1-bromo-4-phenoxy-
U031	N-Butyl alcohol
U032	Calcium chromate
U033	Carbonyl fluoride
U034	Chloral
U035	Chlorambucil
U036	Chlordane, technical
U037	Chlorobenzene
U038	Ethyl 4,4'-dichlorobenzilate
U039	4-Chloro-m-cresol
U041	1-Chloro-2,3-epoxypropane
U042	2-Chloroethyl vinyl ether
U043	Vinyl chloride

Hazardous Waste No.	Description of Hazardous Waste
U044	Chloroform
U045	Methyl chloride
U046	Chloromethyl methyl ether
U047	beta-Chloronaphthalene
U048	o-Chlorophenol
U049	Benzenamine, 4-chloro-2-methyl-
U050	Chrysene
U051	Creosote
U052	Cresols
U053	Crotonaldehyde
U055	Cumene
U056	Cyclohexane
U057	Cyclohexanone
U058	Cyclophosphamide
U059	Daunomycin
U060	DDD
U061	DDT
U062	Diallate
U063	Dibenz[a,h]anthracene
U064	Dibenz[a,i]pyrene
U066	1,2-Dibromo-e-chloropropane
U067	Ethylene dibromide
U068	Methylene bromide
U069	Dibutyl phthalate
U070	o-Dichlorobenzene
U071	m-Dichlorobenzene
U072	p-Dichlorobenzene
U073	3-3'Dichlorobenzidine
U074	1,4-Dichloro-2-butene
U075	Dichlorodifluoromethane
U076	Ethylidene dichloride
U077	Ethylene dichloride
U078	1,1-Dichloroethylene
U079	1,2-Dichloroethylene
U080	Methylene chloride
U081	2,4-Dichlorophenol
U082	2,6-Dichlorophenol
U083	1,2-Dichloropropane
U084	1,3-Dichloropropane
U085	1,2:3,4-Diepoxybutane
U086	N,N-Diethylhydrazine
U087	o,o-Diethyl-S-methyl-dithiophosphate
U088	Diethyl phthalate
U089	Diethylstilbestrol
U090	Dihydrosafrole

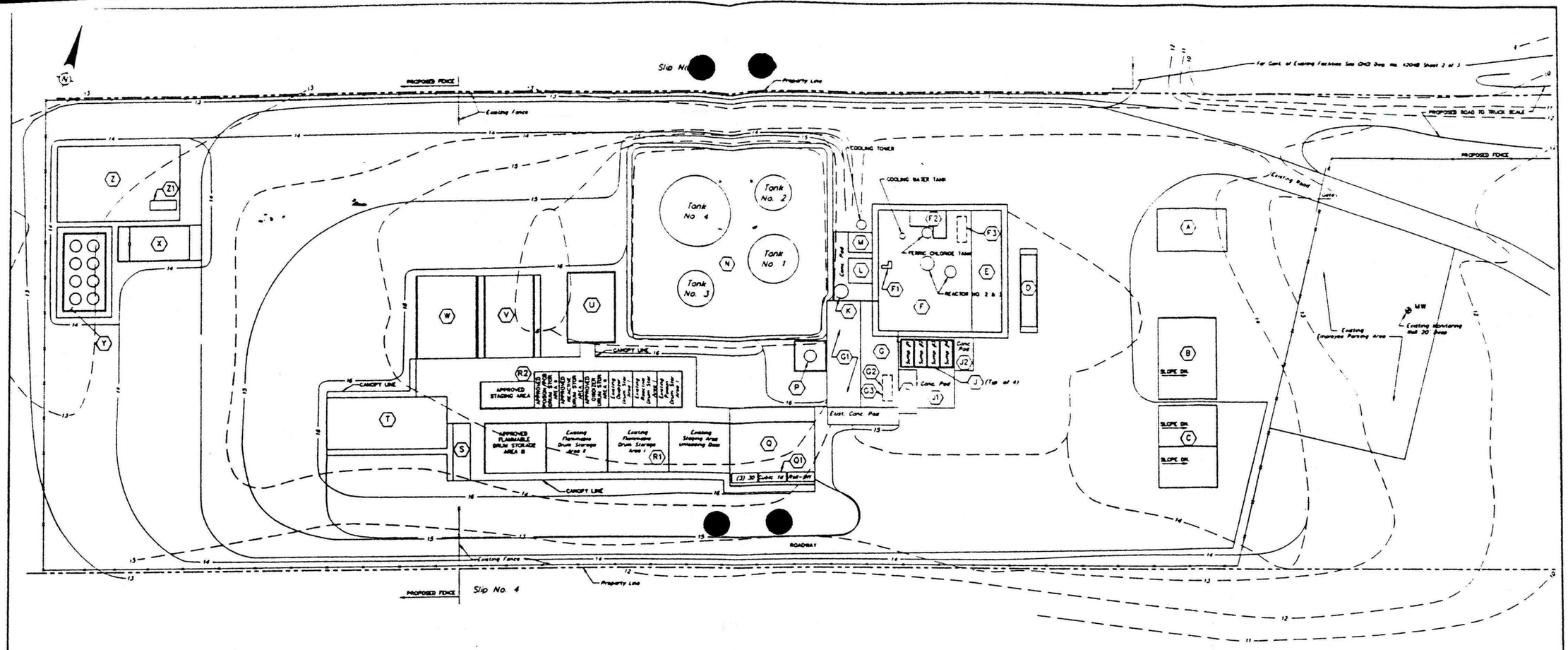
Hazardous Waste No.	Description of Hazardous Waste
U091	3,3'-Dimethoxybenzidine
U092	Dimethylamine
U093	Dimethylaminoazobenzene
U094	7,12-Dimethylbenz[a]anthracene
U095	3,3'-Dimethylbenzidine
U096	Alpha,alpha-Dimethylbenzyhlydro-peroxide
U097	Dimethylcarbamoyl chloride
U098	1,1-Dimethylhydrazine
U099	1,2-Dimethylhydrazine
U101	2,4-Dimethylphenol
U102	Dimethyl phthalate
U103	Dimethyl sulfate
U105	2,4-Dinitrotoluene
U106	2,6-Dinitrotoluene
U107	Di-n-octyl phthalate
U108	1,4-Dioxane
U109	1,2-Diphenylhydrazine
U110	Dipropylamine
U111	Di-N-propylnitrosamine
U112	Ethyl acetate
U113	Ethyl acrylate
U114	Ethylenebis(dithiocarbamic acid), salts and esters
U115	Ethylene oxide
U116	Ethylene thiourea
U117	Ethyl ether
U118	Ethyl methacrylate
U119	Ethyl methanseulfonate
U120	Fluoranthene
U121	Metane, trichlorofluoro-
U122	Formaldehyde
U123	Formic acid
U124	Furan
U125	Furfural
U126	Glycidylaldehyde
U127	Hexachlorobenzene
U128	Hexachlorobutadene
U129	Lindane
U130	Hexachlorcyclopentadene
U131	Hexachloroethane
U132	Hexachlorophene
U133	Hydrazine
U134	Hydrogen fluoride
U135	Hydrogen sulfide
U136	Cacodylic acid
U137	Indeno[1,2,3-cd]pyrene

Hazardous Waste No.	Description of Hazardous Waste
U138	Iodomethane
U140	Isobutyl alcohol
U141	Isosafrole
U142	Kepone
U143	Lasiocarpine
U144	Lead acetate
U145	Lead phosphate
U146	Lead subacetate
U147	Maleic anhydride
U148	Maleic hydrazide
U149	Malononitrile
U150	Melphalan
U151	Mercury
U152	Methacrylonitrile
U153	Methanethiol
U154	Methanol
U155	Methapyrilene(T)
U156	Methyl chlorocarbonate
U157	3-Methylchlolanthrene
U158	4,4'-Methylenebis(2-chloroaniline)
U159	Methyl ethyl ketone
U160	Methyl ethyl ketone peroxide
U161	Methyl isobutyl ketone
U162	Methyl methacrylate
U163	N-methyl-N'nitro-N-nitrosoquanidine
U164	Methylthiouracil
U165	Napthalene
U166	1,4-Naphthalenedione
U167	1-Naphthylamine
U168	2-Naphthylamine
U169	Nitrobenzene
U170	p-Nitrophenol
U171	2-Nitropropane
U172	N-Nitrosodi-n-butylamine
U173	N-Nitrosodiethanolamine
U174	N-Nitrosodiethylamine
U176	N-Nitroso-N-ethylurea
U177	N-Nitroso-N-methylurea
U178	N-Nitroso-N-methylurethane
U179	N-Nitrosopiperidine
U180	Nitrosopyrrolidine
U181	5-Nitro-o-toluidine
U182	Paraldehyde

Hazardous Waste No.	Description of Hazardous Waste
U183	Pentachlorobenzene
U184	Pentachloroethane
U185	Pentachloronitrobenzene
U186	1,3-Pentadiene
U187	Phenacetin
U188	Phenol
U189	Phosphorous sulfide
U190	Phthalic anhydride
U191	Pyridine, 2-methyl-
U192	Pronamide
U193	1,3-Propane sultone
U194	1-Propanamine
U196	Pyridine
U197	p-Benzoquinon
U200	Reserpine
U201	Resorcinol
U202	Saccharin and salts
U203	Safrole
U204	Selenium dioxide
U205	Selenium disulfide
U206	Streptozotocin
U207	1,2,4,5-Tetrachlorobenzene
U208	1,1,1,2,-Tetrachloroethane
U209	1,1,2,2,-Tetrachloroethane
U210	Tetrachloroethylene
U211	Carbon tetrachloride
U213	Tetrahydrofuran
U214	Thallium(1) acetate
U215	Thallium(1) carbonate
U216	Thallium(1) chloride
U217	Thallium(1) nitrate
U218	Thioacetamide
U219	Thiourea
U220	Toluene
U221	Toluenediamine
U222	o-Toluidine hydrochloride
U223	Toluene hydrochloride
U225	Bromoform
U226	1,1,1-Trichloroethane
U227	1,1,2-Trichloroethane
U228	Trichloroethene
U234	sym-Trinitrobenzene
U235	Tris(2,3-dibromopropyl) phosphate
U236	Trypan blue

Hazardous Waste No.	Description of Hazardous Waste
U237	Uracil mustard
U238	Ethyl carbarmate (urethan)
U239	Xylene
U240	2,3-D, salts and esters
U243	Hexachloropropene
U244	Thiram
U246	Bromine cyanide
U247	Methoxychlor
U248	Warfarin, when present at concentrations of 0.3% or less
U249	Zinc phosphide, when present at concentrations of 10% or less
U328	o-Toluidine
U353	p-Toluidine
U359	Ethylene glycol monoethyl ether

HAC:WRW:lo/0116X/1-4lsp



LEGEND

A. *Existing Offices*
B. APPROVED BULK SOLIDS STORAGE PAD (SEE CHCI DWG. NO. 4218)
C. PROPOSED TRUCK STAGING AREA (SEE CHCI DWG. NO. 4218)
D. *Existing Truck Sampling Pad (See CHCI Dwg. No. 4234)*
E. *Existing Laboratory (See CHCI Dwg. No. 4208)*
F. *Existing Process Building No. 1 (See CHCI Dwg. No. 4208)*
F1. *Existing Lab Pack Pour-Off Station (See CHCI Dwg. No. 4208)*
F2. *Existing Waste Oil Treatment/Storage System (See CHCI Dwg. No. 4208)*
F3. *Existing Offloading Area (See CHCI Dwg. No. 4208)*
G. *Existing Process Building No. 2 (See CHCI Dwg. No. 4209 Sheet 2 of 2)*
G1. *Existing Drum Storage Area (See CHCI Dwg. No. 4209 Sheet 2 of 2)*
G2. *Existing Filter Press Roll-Off Area (See CHCI Dwg. No. 4209 Sheet 2 of 2)*
G3. *Existing Offloading Area (See CHCI Dwg. No. 4209)*
H. *Existing Filter Press/Roll-Off Building*
J. *Existing Receiving Tanks (Sump #1 - #4)*
J1. *Existing Bulk Truck Unloading Area*
J2. *Existing Bulk Truck Unloading Area*
K. LIME SILO
L. *Compressor Shed*
M. *Carbon Absorption Shed*
N. *Existing Tank Farm (See CHCI Dwg. No. 4214)*
P. APPROVED SLUDGE CONDITIONING TANK (SEE CHCI DWG. NO. 4219)
Q. *Existing Truck Unloading Area & Bulking Area (See CHCI Dwg. No. 4210 Sheet 1 of 3)*
Q1. *Existing Bulk Container Storage Area (See CHCI Dwg. No. 4210 Sheet 1 of 3)*
R1. *Existing Drum Storage Area (See CHCI Dwg. No. 4210 Sheet 1 of 3)*
R2. APPROVED DRUM STORAGE AREA (SEE CHCI DWG. NO. 4210 SHEET 1 OF 3)
S. APPROVED NON-HAZARDOUS BULKING AREA (SEE CHCI DWG. NO. 4210 SHEET 1 OF 3)
T. APPROVED DRUM CRUSHING & COMPACTION AREA (SEE CHCI DWG. NO. 4212)
U. APPROVED LAB PACK REPACK & CONSOLIDATION AREA (SEE CHCI DWG. NO. 4211)
V. APPROVED TRUCK LOADING DOCK (SEE CHCI DWG. NO. 4234)
W. PROPOSED TRUCK TO TRUCK TRANSFER DOCK (SEE CHCI DWG. NO. 4244)
X. APPROVED TRUCK LOADING/UNLOADING PAD (SEE CHCI DWG. NO. 4216)
Y. APPROVED LISTED WASTE STORAGE TANKS (SEE CHCI DWG. NO. 4216)
Z. APPROVED PROCESS BUILDING NO. 3 (SEE CHCI DWG. NO. 4213 SHEET 1 OF 3)
Z1. APPROVED ROLL-OFF CONTAINER FOR LISTED WASTE (SEE CHCI DWG. NO. 4213 SHEET 1 OF 3)

— — 13 — — *Existing Contours*
——— 13 ——— PROPOSED CONTOURS

NOTES:

1. EXISTING FACILITIES HAVE BEEN IDENTIFIED ON THIS DRAWING AND ARE SHOWN ON CHCI DWG. NO 4203. ALL OTHER OPERATIONS & STRUCTURES SHOWN ON THIS DRAWING ARE PREVIOUSLY APPROVED BUT NOT CONSTRUCTED OR ARE PROPOSED IN THIS APPLICATION.
2. PROPOSED CONTOURS ARE TO BE DEVELOPED ALONG WITH THE PROPOSED FACILITIES.

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CHCI DWG. NO. 4204B

ISSUE	DESCRIPTION	DRAWN	CHKD	APPD	DATE
B	SEE REVISION NOTE B	K.M.C.	B.H.P.	B.H.P	1/20/94
A	RCRA PART B MODIFICATION	K.M.C.	B.H.P.	B.H.P	1/20/94

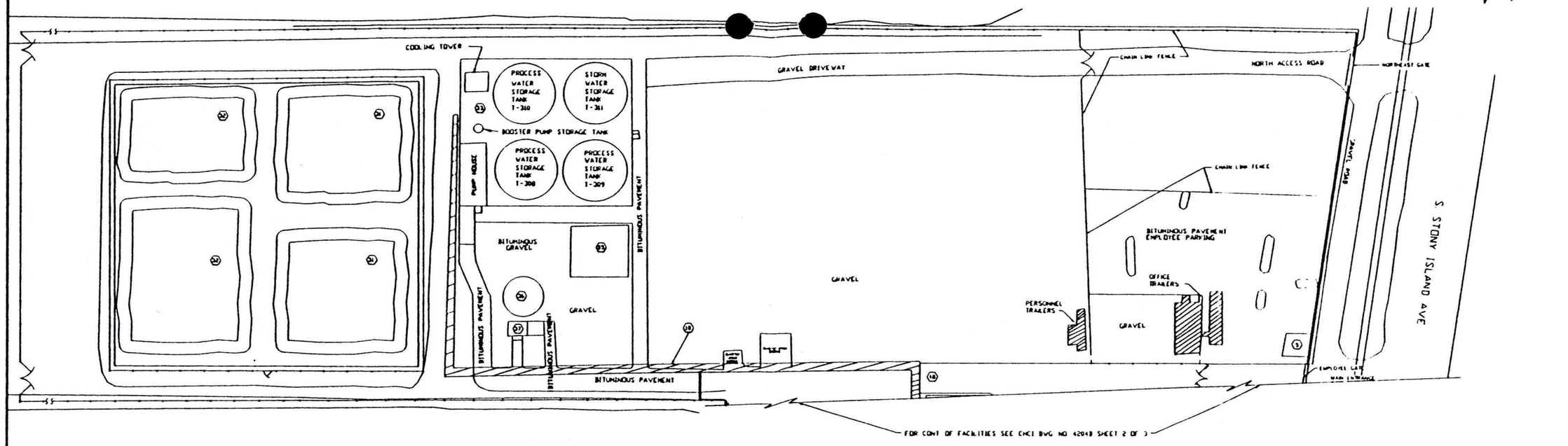
B | REVISED ROADWAY AND LEGEND.
REV. # | REVISION NOTES

Clean Harbors
ENVIRONMENTAL SERVICES, INC.
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200/1800

TITLE
CLEAN HARBORS OF CHICAGO, INC.
11800 S. STONY ISLAND AVENUE
CHICAGO, ILLINOIS 60617

SITE PLAN - EXISTING,
APPROVED, MODIFIED & PROPOSED ACTIVITIES
SHEET 1 OF 3

PROJECT NO. GW-5404
SCALE 1" = 40'
DRAWING NO. 2916-C-19



LEGEND

5. GUARD HOUSE
18. PIPE RACKS
31. PROCESS WATER COOLING PONDS (NO LONGER IN USE)
32. STORM WATER PONDS (NO LONGER IN USE)
33. NEW PROCESS WATER COOLING & STORAGE SYSTEM
36. FIRE WATER TANK
37. FIRE WATER PUMP HOUSE
55. SEWER PRETREATMENT SYSTEM

CHCI DWG. NO. 4204B

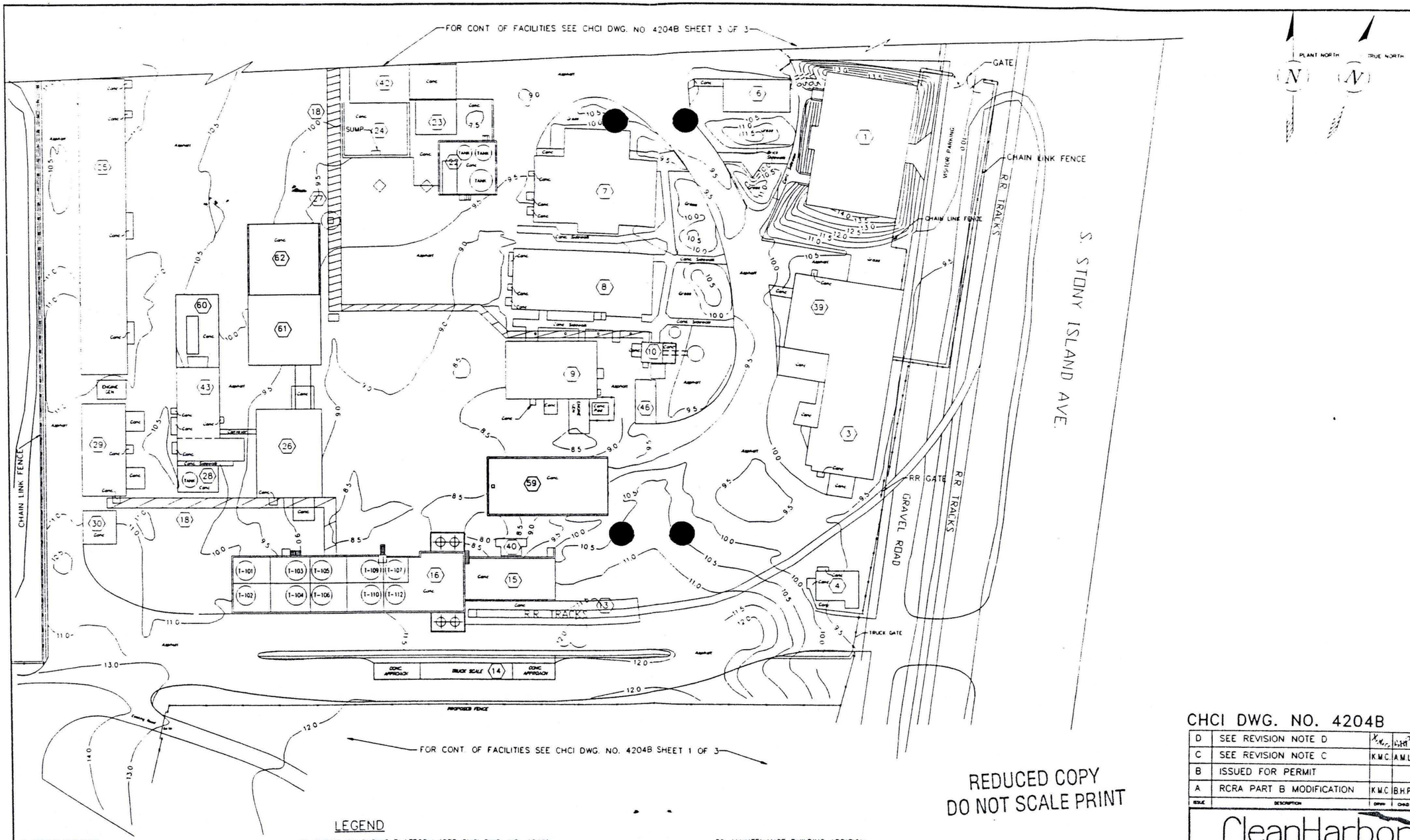
A	RCRA PART B MODIFICATION	KMG	2-24	JJW	3/24/94
STAGE	DESCRIPTION	DRAWN	CHKD	APPVD	DATE

CleanHarbors
ENVIRONMENTAL SERVICES, INC.
325 Wood Road
Braintree Massachusetts 02184
Telephone (617) 849-1200/1800

CLEAN HARBORS OF CHICAGO, INC.
11800 S. STONY ISLAND AVENUE
CHICAGO, ILLINOIS 60617

SITE PLAN
EXISTING, APPROVED & MODIFIED ACTIVITIES
SHEET 3 OF 3

PROJECT NO. GW-5404
SCALE 1"=50'
DRAWING NO. 2916-C-22



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LEGEND

1. OFFICE BUILDING
3. MAINTENANCE BUILDING
4. TRANSPORTATION/RECEIVING BUILDING
6. EAST PUMP HOUSE
7. PERSONNEL/TRAINING CENTER
8. LABORATORY BUILDING
9. CONTROL BUILDING
10. MWRDGC LIFT STATION
13. RAIL CAR UNLOADING AREA (SEE CHCI DWG. NO. 4217)
14. TRUCK SCALE
15. TRUCK UNLOADING PLATFORM (SEE CHCI DWG. NO. 4248)
16. FLAMMABLE STORAGE TANK FARM (SEE CHCI DWG. NO. 4215)
18. PIPE RACKS
22. NEUTRALIZING AREA
23. EFFLUENT TREATMENT BUILDING
24. LAMELLA SETTLERS
25. CONTAINER MANAGEMENT BUILDING (SEE CHCI DWG. NO. 4210 SHEET 3 OF 3)
26. IGNITABLE CONTAINER MANAGEMENT BUILDING (SEE CHCI DWG. NO. 4210 SHEET 2 OF 3)
27. STORM WATER LIFT STATION
28. NITROGEN STORAGE AREA
29. UTILITY BUILDING
30. FUEL OIL STORAGE
39. MAINTENANCE BUILDING ADDITION
40. DECONTAMINATION BUILDING
42. FILTER BUILDING
43. FUELS BLENDING OPERATION (APPROVED)(SEE CHCI DWG. NO. 4213 SHEET 2 OF 3)
46. FIRE EQUIPMENT BUILDING
59. TRUCK STAGING AREA (PROPOSED)(SEE CHCI DWG. NO. 4247)
60. ROLL-OFF PAD FOR FUELS BLENDING (APPROVED)(SEE CHCI DWG. NO. 4213 SHEET 2 OF 3)
61. CONTAINER HANDLING DOCK (PROPOSED)(SEE CHCI DWG. NO. 4245)
62. TRUCK PAD (PROPOSED)(SEE CHCI DWG. NO. 4246)

D	ADDED CONTOUR LINES AND GROUND SURFACE NOTATION. REVISED TITLE OF BUILDING 39
C	REVISED FLAMMABLE STORAGE TANK FARM. RELOCATED 59. TRUCK STAGING AREA (PROPOSED
REV #	REVISION NOTES

CHCI DWG. NO. 4204B

D	SEE REVISION NOTE D	K.M.C.	A.M.L.	A.M.L.	9/1/94
C	SEE REVISION NOTE C	K.M.C.	A.M.L.	A.M.L.	8/23/94
B	ISSUED FOR PERMIT				
A	RCRA PART B MODIFICATION	K.M.C.	B.H.P.	B.H.P.	7/20/94
ISSUE	DESCRIPTION	DRWN	CHKD	APPR	DATE

CleanHarbors
ENVIRONMENTAL SERVICES, INC.
325 Wood Road
Braintree, Massachusetts 02184
Telephone (617) 849-1200/1800

TITLE
CLEAN HARBORS OF CHICAGO, INC.
11800 S. STONY ISLAND AVENUE
CHICAGO, ILLINOIS 60617

SITE PLAN – EXISTING, APPROVED, MODIFIED & PROPOSED ACTIVITIES
SHEET 2 OF 3

PROJECT NO GW-5404
SCALE 1" = 30'
DRAWING NO 2916-C-21

Clean Harbors
ENVIRONMENTAL SERVICES COMPANIES

1200 CROWN COLONY DRIVE
P.O. BOX 9137
QUINCY, MA 02269
(617) 849-1800

Via Overnight Delivery

April 15, 1993

Mr. George J. Hamper, Chief
Illinois Section
RCRA Permitting Branch
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

Re: Clean Harbors of Chicago, Inc.
Part B Permit Application
ILD000608471

Dear Mr. Hamper:

Clean Harbors of Chicago, Inc. (CHCI) is pleased to submit this letter and attachments in response to your notice dated February 8, 1993 concerning the RCRA Air Emission Standards (40 CFR Part 264 Subparts AA and BB) and 40 CFR Part 264 Subpart X (Miscellaneous Units) requirements as they apply to certain proposed hazardous waste management activities described in CHCI's RCRA Part B Permit Application currently under review by the Illinois Environmental Protection Agency (IEPA).

a. RCRA Air Emissions

CHCI is an existing hazardous waste storage and treatment facility operating under interim status rules. CHCI's current activities are limited to: (i) the storage and treatment in tanks of aqueous-based wastewaters contain trace organic concentrations of less than 10 percent by weight, and; (ii) the storage, consolidation and transfer of hazardous waste in containers. Neither of these current waste activities are subject to 40 CFR Part 265 Subparts AA or BB.

However, under the Part B Permit Application, CHCI has proposed to install and operate two (2) hazardous waste management units/ activities which may be subject to the air emission regulations. The units/activities include:

1. Listed Waste Treatment - A bulk tank storage system and treatment operation for "listed" (e.g., F-code) hazardous waste liquids and solids.

2. Fuel Blending System - A bulk tank storage system and automated blending unit to produce and store organic based hazardous waste fuels.

These proposed activities are not subject to Subpart AA (Process Vents) standards since neither involves the six covered processes (i.e., distillation, thin film evaporation, etc.). However, both units/activities are potentially subject to Subpart BB (Air Emission Standards for Equipment Leaks) standards due to the presence of pumps, valves, and other equipment that may come in contact with organic constituents at concentrations greater then 10% by weight.

At the present time, both of these systems are in the conceptual design stage. Without benefit of detailed construction plans that show the exact location and number of pumps, valves, vents, and other such regulated equipment, CHCI is not fully able at this time to develop and submit a comprehensive Subpart BB management and recordkeeping program for the Agency's review. I have discussed this situation with Ms. Juana Rojo of your staff who indicated that the Agency is willing to delay the requirement for submittal of such information and will instead issue a final permit condition in which the Subpart BB documentation must be submitted prior to actual start-up of the affected equipment.

b. Subpart X - Miscellaneous Units

1. Waste Compactor Unit - The waste compactor is an existing semiautomatic device which is used to compact hazardous and non-hazardous wastes in containers (e.g., 55-gallon drums). The types of waste which are processed by the unit include spent absorbents, paper, debris, personnel protective equipment (e.g., tyvek suits, gloves, boots), filters, rags, empty bottles, and the like. The unit is equipped with a liquid removal system which removes liquids that separate out of the solid material during the compaction process.

The system operates under a nitrogen blanket, and air emissions from the system are treated through an attached carbon adsorption unit to reduce volatile emissions to the atmosphere. The unit was approved for installation and operation by IEPA. Detailed vendor information on the design and operation of the system, and copies of the IEPA operating permits are included in Attachment 1 for your information.

Since receiving your letter, James Laubsted, CHCI's Facility Compliance Manager, and I have had numerous discussions with Ms. Rojo to discuss the design, operation, and regulatory status of the unit. Ms. Rojo has also discussed the permit status of the unit with Mr. Mark Schollenberger of IEPA. Ms. Rojo has indicated to CHCI that, based on these discussions, the Agency has determined that the waste compactor is a "treatment in containers" unit for which the IEPA has permitting authority. Thus, the Subpart X standards do not apply to this unit, and a separate Federal Part B is not required.

2. Aerosol Can Compactor Unit - Following our discussion of earlier today, CHCI has decided to withdraw its proposal to install and operate an aerosol can compactor and propellant recovery system. This decision has been made in the interest of keeping the remainder the license application on schedule to allow a draft permit to be issued by USEPA/IEPA's intended target date of May 15, 1993. CHCI does, however, intend to submit a Class 3 Permit Modification application to install and operate an aerosol can processing system at some future date.

CHCI appreciates the Agency's time and assistance in these matters. If you have any questions concerning this response, please contact me at (617)849-1800, extension 4473.

Sincerely,

Paul A. Ahearn
Manager, Regulatory Compliance

cc: Mark Schollenberger - IEPA
James Laubsted - CHCI

Attachment